Draft

BAYVIEW RESIDENTIAL PROJECT

Environmental Impact Report

Contra Costa County File Nos. GP04-0007, RZ04-3148, DP04-3080, SD04-8809
State Clearing House No. 2008032074

Prepared for
Contra Costa County
Department of Conservation and Development

December 2009

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CHAPTER I
Introduction

A. Environmental Review

The project sponsor, Discovery Builders, Inc., proposes to develop 163 single-family homes and associated internal roadways on an approximately 78-acre project site in the Vine Hill Pacheco Boulevard Area of unincorporated Contra Costa County. To accommodate the proposed use and density, the proposed project includes a zoning reclassification, new land use designation and changes to the Vine Hill/Pacheco Boulevard area policy language that would require an amendment to the Contra Costa County *General Plan*. Contra Costa County, as Lead Agency, determined that preparation of an environmental impact report (EIR) is required for the Bayview Residential project because there is "substantial evidence that the project may have a significant effect on the environment."

Because the Lead Agency (in this case Contra Costa County) decided at the outset to study all potential impacts associated with the project, there is no need to narrow the scope of the Draft EIR through preparation of an Initial Study for the project. This Draft EIR addresses each environmental topic for which the project could result in a significant impact and identifies topics for which the project would have a less-than-significant impact.

On March 19, 2008, the County issued a Notice of Preparation (NOP) (provided in Appendix A to this document) to governmental agencies and organizations and persons interested in the project. The NOP invited all responsible agencies, interested agencies and individuals to submit comments which address environmental concerns resulting from implementation of the project. The County also held a public scoping session on April 7, 2008 during which public input regarding environmental issues to be addressed was also received. As appropriate, this Draft EIR addresses those responses to the NOP that involved environmental issues associated with the project site and proposed project. Copies of written responses to the NOP are provided in Appendix B to this document.

The Draft EIR is available for public review for the period between December 9, 2009 and January 25, 2010, during which time written comments on the adequacy of the Draft EIR may be submitted to Ryan Hernandez, Contra Costa County Department of Conservation and Development, 651 Pine Street, 4th Floor – North Wing, Martinez, CA 94553. Written comments may also be submitted electronically to Ryan.Hernandez@dcd.cccounty.us. Responses to all substantive comments received on the adequacy of the Draft EIR and submitted within the specified review period will be prepared and included in the Final EIR. The County will then

consider certification of the FEIR under the California Environmental Quality Act, including consideration of whether the FEIR was completed in compliance with CEQA; was presented to and reviewed by the decision-making body and is adequate, accurate and reflects the County's independent judgment and analysis. Prior to approval of the project, the County must certify the Final EIR and adopt a reporting and monitoring program for mitigation measures identified in this report in accordance with the requirements of Public Resources Code Section 21081.

B. Purpose and Intended Use of this Draft EIR

The California Environmental Quality Act ("CEQA") and the Guidelines promulgated thereunder requires that, before approving a project with potentially significant environmental effects, an environmental impact report ("EIR") must be prepared that fully describes the environmental effects of the project. The EIR is a public information document for use by governmental agencies and the public to identify and evaluate potential environmental consequences of a proposed project, to recommend mitigation measures to lessen or eliminate adverse impacts and to examine feasible alternatives to the project. The information contained in the EIR is reviewed and considered by the governing agency prior to the ultimate decision to approve, disapprove, or modify the proposed project.

CEQA states that the Lead Agency (in this case Contra Costa County) shall not "approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects…" (Section 21002). Among the EIR's key purposes is to identify mitigation measures or alternatives that will substantially lessen or avoid significant adverse environmental effects. If the Lead Agency approves the project despite residual significant adverse impacts that cannot be mitigated to less-than-significant levels, the agency must adopt a "Statement of Overriding Considerations" stating the reasons for its action in writing.

C. EIR Guidance

The EIR has been prepared by Contra Costa County as Lead Agency in conformance with CEQA. The EIR is intended to provide the information and environmental analysis necessary to assist public agency decision-makers in considering the approvals necessary to implement the proposed project.

The guidelines for implementing CEQA help define the role of this EIR:

> **15121 (a) Information Document.** An EIR is an informational document which will inform public agency decision-makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The public agency shall consider the information in the EIR along with other information which may be presented to the agency.
>
> **15151 Standards for Adequacy of an EIR.** An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to

> make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

Plans for constructing and occupying the project have proceeded to a degree sufficient to permit environmental analysis in conformance with CEQA. Accordingly, this EIR presents reasonable assumptions (as described in Chapter 3, *Project Description*) about the proposed project and describes their associated environmental impacts. Where necessary, the analyses are based on conservative assumptions that tend to overstate project impacts.

The *CEQA Guidelines*, Section 15382, define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project…." Therefore, in identifying the significant impacts of the project, this EIR concentrates on its substantial physical change and upon mitigation measures to avoid, reduce, or otherwise alleviate those effects.

D. Organization of this Draft EIR

This Draft EIR is organized as follows:

The *Introduction* (Chapter 1) of this EIR contains a summary of the project and environmental review process. The chapter also describes the purpose, intended use and organization of the EIR.

The *Summary* (Chapter 2) of this EIR contains a summary of the document and allows the reader to easily reference the analysis of potentially significant effects, proposed mitigation measures, residual environmental impacts after mitigation and alternatives to the project that would reduce or avoid significant effects on the environment. Table 2-1, Summary of Environmental Impacts and Mitigation Measures, is provided at the end of Chapter 2. Detailed analysis of these issues is contained in Chapter 4 of the document.

The *Project Description* (Chapter 3) describes the project location, the physical characteristics of the project, the project sponsor's objectives, a list of the required project approvals and other agencies that must consider aspects of the project.

Environmental Setting, Impacts and Mitigation Measures (Chapter 4) contains a discussion of the setting (existing conditions and regulatory framework), the environmental impacts (including cumulative impacts) that would result from the project and the mitigation measures that would reduce or eliminate the identified adverse impacts. As appropriate and relevant, the project has been assessed for potential impacts during and after construction and mitigation measures are identified accordingly. The criteria used to assess the significance of adverse environmental effects are identified and the significance of the impact both prior to and following mitigation is reported.

Alternatives (Chapter 5) evaluates a reasonable range of alternatives to the proposed project including a No Project alternative as required under Section 15126.6(e) of the CEQA *Guidelines*. This Chapter provides discussion of the environmental impacts associated with each alternative, compares the relative impacts of each alternative to those of the project and the other alternatives and discusses the relationship of the alternatives to the project sponsor's objectives. The determinations of the County concerning the feasibility, acceptance, or rejection of each and all alternatives considered in this EIR will be addressed and resolved in the County's findings, when it considers approval of the project, as required by CEQA.

Impact Overview (Chapter 6) discusses the project's potential for inducing growth and summarizes discussions of cumulative impacts, unavoidable significant impacts and effects found not to be significant.

Report Preparation (Chapter 7) identifies the report preparers. Persons and documents consulted during preparation of the EIR are listed at the end of each analysis section in Chapter 4.

The NOP as well as supporting background documents and technical information for the impact analyses are presented in the appendices. All reference documents listed at the end of each analysis section (throughout Chapter 4) are available for public review at the Contra Costa County Department of Conservation and Development, Current Planning Division.

CHAPTER 2
Summary

A. Project Description

The project sponsor, Discovery Builders, Inc., proposes to develop a residential subdivision located south of Central Avenue and east of Interstate 680, in the Vine Hill Area of unincorporated Contra Costa County. The project site consists of a single parcel (Assessor's Parcel Number 380-030-046). The project would include the development of 163 single-family homes and associated internal roadways on 42 acres, as well as open space parcels of approximately 11.6 and 15 acres. The project would retain a hilltop of approximately 10 acres as disturbed and undeveloped land. To accommodate the proposed use and density, the proposed project includes a zoning reclassification, new land use designation and changes to the Vine Hill/Pacheco Boulevard area policy language that would require an amendment to the *General Plan*. The major project components would include a grading plan that would substantially alter the existing topography of the project site, provision of access and circulation via a new internal roadway system, repair and/or upgrade to existing utility lines and an extension of utility lines throughout the project site.

B. Environmental Impacts and Mitigation Measures

Potentially significant environmental impacts of the proposed project are summarized in **Table 2-1**. This table lists impacts and mitigation measures in three major categories: significant impacts that would remain significant even with mitigation (significant and unavoidable); significant impacts that could be mitigated to a less-than-significant level (significant but mitigable); and impacts that would not be significant (less than significant). For each significant impact, the table includes a summary of mitigation measure(s) and an indication of level of significance after implementation of mitigation measures. A complete discussion of each impact and associated mitigation measure is provided in Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*.

C. Alternatives

Chapter 5 of this EIR analyzes a range of reasonable alternatives to the proposed project, including the No Project Alternative (required by the CEQA for all EIRs), a Reduced Grading / 50 percent Density Alternative ("Alternative 2"), a Reduced Grading / 87 percent Density Alternative ("Alternative 3"), and a Reduced Grading / Light Industrial Alternative ("Alternative 4").

- **Alternative 1: No Project / Existing Conditions** – Consideration of a No Project Alternative is required under CEQA. Section 15126.6(e) of the CEQA Guidelines states: "The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." Under the No Project Alternative, the proposed project would not be undertaken, and no change would occur on the site. Although it is reasonable to assume that the project site would eventually be developed, no other plans for the project site are currently under consideration outside the proposed project. Therefore, should the proposed project be rejected, the No Project Alternative assumes no change in the existing environmental setting as outlined under each resource area and the property would remain in its current undeveloped state for an unknown period of time.

- **Alternative 2: Reduced Grading / 50 percent Density (82 units) -** The proposed number of housing units would be reduced by approximately 50 percent to yield a total of 82 new single-family units on the project site. The distribution of the 82 residential lots would be reconfigured within the project site such that the developable area, proposed to be approximately 42 acres with the project, would also be reduced by more than 50 percent. In accordance with recommendations from Darwin Myers Associates ("DMA"), the consulting geologist to the County, 2:1 gradients would be limited to slopes with a maximum height of 15 feet, thereby avoiding the need for drainage terraces on the high cut slopes. The upper portions of Vine Hill would not be graded, nor the Oak Trees removed, under this alternative.

- **Alternative 3: Reduced Grading / 87 percent Density (142 units) -** The proposed number of housing units would be reduced by approximately 13 percent to yield a total of 142 new single-family units on the project site. The distribution of the 142 residential lots would be reconfigured within the project site such that the developable area, proposed to be approximately 42 acres with the project, would also be reduced by more than 13 percent. In accordance with recommendations from Darwin Myers Associates ("DMA"), the consulting geologist to the County, 2:1 gradients would be limited to slopes with a maximum height of 15 feet, thereby avoiding the need for drainage terraces on the high cut slopes. However, this alternative assumes changes to the peak elevation of Vine Hill, though reduced when compared with the project.

- **Alternative 4: Reduced Grading / Light Industrial** – This alternative use scenario would be consistent with the *General Plan*. Light industrial uses would be developed in relatively low intensity and Central Avenue would serve as the only access point to the site. The developable area would be reduced by approximately 50 percent. This alternative would be similar to Alternatives 2 and 3 in that it would adhere to the DMA recommendations for slope gradients. The upper portions of Vine Hill would not be graded and the existing peak elevation of Vine Hill and the Oak Trees present on the site would be retained.

Environmentally Superior Alternative

The No Project Alternative would be environmentally superior to the proposed project on the basis of minimization or avoidance of physical environmental impacts. However, the No Project Alternative does not meet any of the project objectives. Therefore, Alternative 4, Reduced Grading / Light Industrial would be considered the environmentally superior alternative since it would reduce the project related significant environmental impacts to aesthetics, land use and traffic. It would not meet the fundamental project objectives of developing residential uses at the project site. This alternative may not be financially viable with an income return that recompenses the time, financial investment and the risk associated with the project.

D. Areas of Controversy

CEQA Guidelines Section 15123 specifies that the EIR summary shall identify "areas of controversy" known to the Lead Agency, including issues raised by agencies and the public, and issues to be resolved, including the choice among alternatives and whether or how to mitigate the significant effects. Private citizens and nearby residents commented during the scoping process. In addition, comments were received from the following organizations and government agencies:

- Central Contra Costa Sanitary District
- Contra Costa Fire Protection District
- Contra Costa Local Agency Formation Commission
- East Bay Regional Park District
- Mt. View Sanitary District
- State of California Department of Transportation

Appendix B includes all written comments on the Notice of Preparation and comments made during the public scoping session on April 7, 2008. The overarching themes in the written and oral comments received are as follows:

- Impacts to utilities infrastructure;
- Annexation of the property into a wastewater utility service district;
- Impacts to visual quality;
- Impacts to air quality for nearby residents;
- Impacts to local wildlife and wildlife habitat;
- Impacts resulting from increased traffic on local private and county roads;
- Impacts to public services including police, schools, fire protective services and emergency response times;
- Noise impacts from construction activities.

TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Aesthetics		
Impact A.1: Construction of the project would create temporary aesthetic nuisances associated with project construction and grading activities. (Significant)	**Mitigation Measure A-1:** The project shall incorporate into all construction contracts and ensure implementation of the following measures: • To the extent feasible, during all site preparation and exterior construction activities, a screened security fence shall be placed and maintained around the perimeter of the project site. Visual screening along Central Avenue and bordering the perimeter of the property shall be placed and maintained and removed upon completion of construction work. The County shall determine the appropriate height, material and placement of such fencing, as appropriate and effective given the relative change in elevation and viewpoints to the site. • Construction staging areas shall be located in the interior of the project site, away from the property boundary and remain clear of all trash, weeds and debris etc. Construction staging areas may include other areas of the project site when necessary, but shall be located away from adjacent properties and I-680 to minimize visibility from public view to the extent feasible.	Less than Significant
Impact A.2: The project would alter the existing visual character of the project site, and would substantially degrade the existing visual quality of the site and its surroundings. (Significant)	None available.	Significant and Unavoidable
Impact A.3: The project would not have a substantial adverse effect on a scenic vista or adversely affect scenic resources along any designated scenic highway. (Less than Significant)	None required.	Less than Significant
Impact A.4: Development of the project would introduce new sources of light and glare onto the project site and increase ambient light in the vicinity. (Less than Significant)	None required.	Less than Significant
Impact A.5: The project, when combined with other foreseeable development in the vicinity, would result in a cumulative aesthetics impact related to scenic vistas and resources, or visual character and visual quality. (Less than Significant)	None required.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Air Quality		
Impact B.1: Activities associated with site preparation and construction throughout development of the project would generate suspended and inhalable particulate matter. (Significant)	**Mitigation Measure B-1:** During construction, the project applicant shall require the construction contractor to implement the following measures required as part of Bay Area Air Quality Management District's ("BAAQMD") basic and enhanced dust control procedures required for construction sites. These include: *Basic Controls that Apply to All Construction Sites* a) Water all active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site. b) Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer). c) Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. d) Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites. e) Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent paved roads. *Enhanced Controls that Apply to Sites Greater than 4 Acres* f) All "Basic" controls listed above, plus g) Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more). h) Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.). i) Limit traffic speeds on unpaved roads to 15 miles per hour. j) Install sandbags or other erosion control measures to prevent silt runoff to public roadways. k) Replant vegetation in disturbed areas as quickly as feasible.	Less than Significant
Impact B.2: Activities associated with site preparation and construction throughout development of the project would generate emissions of criteria pollutants, including equipment exhaust emissions. (Less than Significant)	None required.	Less than Significant
Impact B.3: The project would result in increased emissions of criteria pollutants and their precursors from vehicular traffic to and from the project site; however, the emission increases from the project would not exceed Bay Area Air Quality Management District significance criteria. (Less than Significant)	None required.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Air Quality (cont.)		
Impact B.4: The project would result in exposure of persons to substantial levels of Toxic Air Contaminants ("TACs") such that the probability of contracting cancer for the Maximally Exposed Individual exceeds 10 in one million. (Significant)	**Mitigation Measure B.4:** The applicant shall install air filters at the residences that have a Minimum Efficiency Reporting Value ("MERV") rating of 14 or higher based on ASHRAE Standard 52.2 Test Procedures. Filters with a MERV 14 rating have a control efficiency of 85 percent or more for airborne particulate matter. Filters shall be installed in conjunction with a forced air system or other ventilation system capable of ensuring sufficient pressure to facilitate whole building filtration. Filters must be maintained according to manufacturers' recommendations to be effective.	Less than Significant
Impact B.5: The project would not conflict with implementation of state goals for reducing greenhouse gas emissions and thereby would not have an adverse effect on the State's ability to meet its goals under AB 32 with regard to Global Climate Change. (Less than Significant)	None required.	Less than Significant
Impact B.6: The project would locate sensitive receptors near existing sources of objectionable odors. (Less than Significant)	None required.	Less than Significant
Impact B.7: The project is fundamentally consistent with the growth assumptions of the Bay Area *Clean Air Plan*. (Less than Significant)	None required.	Less than Significant
Biological Resources		
Impact C.1: Implementation of the project would result in the loss of degraded California annual (non-native) grassland within the project boundaries, which is used by special status raptors as foraging habitat. (Less than Significant)	None required.	Less than Significant
Impact C.2: Project activities would result in temporary disturbance to jurisdictional wetlands. (Significant)	**Mitigation Measure C.2*:*** Once detailed plans are available for construction of the water supply pipeline, the project sponsor shall retain a qualified biologist to quantify the extent and magnitude of impacts to wetlands, and the project sponsor shall replant disturbed areas with the same native species as those removed and monitor their survival for a period of five years (and take remedial action if necessary), or until pre-project conditions can be demonstrated. It is anticipated that a Clean Water Act Section 404 Nationwide Permit would be required, and if so, additional conditions may be imposed. If required, the 404 Nationwide Permit shall be obtained prior to issuance of a grading permit.	Less than Significant
Impact C.3: Project activities would degrade adjacent jurisdictional wetlands. (Significant)	**Mitigation Measure C.3:** When working near brackish marsh areas, the edge of the wetland a buffer area of 100 feet, shall be clearly marked with orange mesh fencing or equivalent to indicate limits of disturbance.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)		
Impact C.4: Project activities would have a deleterious effect on special status bird species. (Significant)	**Mitigation Measure C.4:** Habitat removal shall not occur during the nesting season for raptors or migratory birds (March 15 – June 15). If construction is initiated during this period, pre-construction survey by a qualified biologist shall be conducted to determine if breeding birds are present, and if so, the loss of the nest itself, immediate nesting substrate shall be avoided until after the breeding season or the fledging of young. Additionally, a buffer area of 300 feet shall be maintained within which no construction activity shall be allowed.	Less than Significant
Impact C.5: The Project would result in the loss of 34 native oak trees, each with a trunk diameter of 6.5 inches or larger, which are "Protected Trees" as defined in the *Contra Costa County Zoning Code*, and which constitute an inholding of Oak Woodland. (Significant)	**Mitigation Measure C.5:** The *Contra Costa County Zoning Code* recognizes the importance and diminishing extent of protected oak woodlands. For the oak woodland habitat that is removed, oak woodland habitat shall be replaced offsite at an agreed upon location with an equal or larger area and equal number of trees (34). Alternatively, trees may be planted at locations that currently support disturbed or nonnative habitats, in the ratio of three new oaks planted for each tree lost. In either case, offsite mitigation must take place on land which would be maintained as open space in perpetuity.	Less than Significant
Impact C.6: Project activities in the vicinity of the pond would affect California red-legged frogs or western pond turtle. (Significant)	**Mitigation Measure C.6:** The following measures shall be implemented if a preconstruction survey to USFWS-approved protocol is completed and it is established that CRLF is present. If the USFWS concludes that the species may be considered absent from the site, these measures will not need to be implemented: • The project sponsor shall install exclusionary fencing, such as silt fences, around the process ponds and around all construction areas that are within 100 feet of or adjacent to potential California red-legged frog ("CRLF") habitat. Once fencing is in place, it shall be maintained by the project sponsor until completion of construction within or adjacent to the enclosure. • Prior to commencement of any earthmoving activities, the project sponsor shall retain a qualified monitoring biologist to train all construction personnel and work crews on the sensitivity and identification of the CRLF and the penalties for the "take" of this species. In addition, visual materials shall be provided to assist in identifying the species. Training sessions shall be repeated for all new employees before they access the project site and periodically throughout project construction. • The monitoring biologist shall demarcate construction avoidance areas in the field and monitor construction activities within 300 feet of aquatic habitat for CRLF. The demarcation shall remain on-site until all initial vegetation clearing and habitat disturbance is completed. • All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 100 feet from any riparian habitat or water. • The project sponsor shall ensure ongoing general maintenance of the pond and adjacent riparian habitat in perpetuity. • If a California red-legged frog is identified in the project work area, all work in the immediate area shall immediately cease and the USFWS shall be contacted immediately. Work shall not begin again until so authorized by the USFWS.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)		
Impact C.7. The project would interfere with the movement of native resident or migratory wildlife species or with migratory wildlife corridors. (Less than Significant)	None required.	Less than Significant
Impact C.8: The project, in conjunction with past, present and reasonably foreseeable projects, would not cumulatively affect biological resources. (Less than Significant)	None required.	Less than Significant
Cultural Resources		
Impact D.1: The site preparation and construction of the project would involve extensive subsurface disturbance that could potentially encounter and damage previously undiscovered buried historic or archaeological resources or human remains. (Significant)	**Mitigation Measure D.1a**: If any cultural artifacts are encountered during site grading or other ground–disturbing activities, all ground disturbances within 200 feet of the discovery shall be halted until a qualified archaeologist can identify and evaluate the resource(s) and, if necessary, identify mitigation measures to prevent any significant adverse effects on the resource(s). The project sponsor shall fund and implement the mitigation in accordance with Section 15064.5(c)–(f) of the CEQA *guidelines* and Public Resources Code Section 21083. **Mitigation Measure D.1b:** In the event that any human remains are encountered during site disturbance, all ground–disturbing work shall cease immediately and the County coroner must be notified immediately. If the coroner determines the remains to be Native American, the Native American Heritage Commission must be contacted within 24 hours. The qualified archaeologist, in consultation with the Native American Heritage Commission, will identify subsequent measures for disposition of the remains.	Less than Significant
Impact D.2: The project, in conjunction with past, present and reasonably foreseeable development, could contribute to cumulative impacts on cultural resources. (Less than Significant)	None required.	Less than Significant
Geology, Soils and Seismicity		
Impact E.1: Development at the project site could subject people and property to slope instability hazards, including landslides, debris flows and rockfalls caused by seismic or nonseismic mechanisms. (Significant)	**Mitigation Measure E.1:** The applicant shall include the recommendations made in both Engeo's *Geotechnical Exploration Bay View Subdivision* report dated August 15, 2003 and the Geotechnical *Review of Rough Grading Plan and Supplemental Recommendations* by Engeo dated June 27, 2006 as part of the proposed project. These recommendations include oversight of grading operations which shall be conducted by a California Certified Engineering Geologist or Registered Professional Geotechnical Engineer. The final grading plans shall be in accordance with the *Contra Costa County Grading Ordinance (Title 7 Division 716)* and reviewed and approved of by the Contra Costa Department of Conservation and Development prior to the commencement of project construction. Upon identification of suspect slopes or areas that are observed to be unstable during grading, the engineer or geologist shall oversee the removal of the suspected material and	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Geology, Soils and Seismicity (cont.)		
Impact E.1 (cont.)	reconstruction of the slope as a buttress fill slope with engineered slope stabilization features such as geogrid reinforcement. Final inspection of excavated slopes and graded slopes shall be completed by a registered civil or geotechnical engineer or certified engineering geologist with knowledge of the project conditions.	
Impact E.2: Project development at the proposed site would be subjected to significant ground shaking from a seismic event on one of the regional active faults causing personal injury and significant damage to structures. (Significant)	**Mitigation Measure E.2:** A site-specific, design level geotechnical investigation shall be required as part of this project. The investigation shall include an analysis of expected ground motions at the site from known active faults in accordance with the 2007 California Building Code ("Title 24") which requires that all designs accommodate ground accelerations expected from known active faults. In addition, the investigation shall review improvement and grading plans and update geotechnical design recommendations for the walls, foundations, foundation slabs and surrounding related improvements (utilities, roadways, parking lots and sidewalks). The report shall be subject to technical review and approval by a registered geotechnical engineer or engineering geologist. All recommendations by the project engineer and geotechnical engineer shall be incorporated into the final design. Recommendations that are applicable to foundation design, earthwork and site preparation that were prepared prior to or during the project design phase, shall be incorporated in the project. The final seismic considerations for the site shall be submitted to and approved of by the Contra Costa Department of Conservation and Development prior to the commencement of the project.	Less than Significant
Impact E.3: With proposed fill placements reaching up to 59 feet thick, the project site would be susceptible to settlement either from static forces or earthquake induced forces causing structural damage or personal injury. (Significant)	**Mitigation Measure E.3:** The project applicant shall incorporate the geotechnical recommendations made for the project site by Engeo, Inc. pertaining to fill placement and site preparation including the fill transition zone areas as part of the project. In addition, the project applicant shall adhere to County grading and construction policies to reduce the potential for geologic hazards, including settlement and differential settlement. All construction activities and design criteria shall comply with applicable codes and requirements of the 2007 California Building Code ("Title 24").	Less than Significant
Impact E.4: Construction activities at the project area would loosen and expose substantial volumes of surface soils. If left exposed over long periods, soils would erode by wind or rain resulting in loss of topsoil. In addition, filled soils on slopes that are not adequately managed would be susceptible to erosion. (Significant)	**Mitigation Measure E.4:** The project applicant shall maintain a minimum 90 percent vegetative cover of exposed slopes upland of the proposed development for the life of the project. Drainage conveyances on the cut terraces shall be maintained to permit a minimum of 85 percent of total conveyance capacity. Any evidence of gulley or rill erosional effects shall be remedied immediately by the applicant through additional hydroseeding or other industry standard measures for erosion control.	Less than Significant
Impact E.5: The project, in conjunction with cumulative development, would not result in significant cumulative impacts with respect to geology, soils or seismicity. (Less than Significant)	None required.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Hazards and Hazardous Materials		
Impact F.1: Hazardous materials used on-site during construction activities (i.e., solvents) could be released to the environment through improper handling or storage. (Significant)	**Mitigation Measure F.1:** The use of construction best management practices shall be implemented as part of construction to minimize the potential negative effects of accidental release of hazardous materials to groundwater and soils. These shall include the following: • Follow manufacturer's recommendations on use, storage and disposal of chemical products used in construction; • Avoid overtopping construction equipment fuel gas tanks; • During routine maintenance of construction equipment, properly contain and remove grease and oils. • Properly dispose of discarded containers of fuels and other chemicals.	Less than Significant
Impact F.2: Project operations would generate general household and maintenance hazardous waste. (Less than Significant)	None required.	Less than Significant
Impact F.3: The crude oil pipelines that transect the project site would represent a hazard to the public or environment in the event of accidental upset. (Less than Significant)	None required.	Less than Significant
Impact F.4: The proposed residences would be located relatively close to the Burlington Northern Santa Fe Railroad tracks which are used to transport hazardous materials among other types of freight. In the event of accidental upset through derailment or other means, release of hazardous materials could represent a hazard to the public or environment through inhalation. (Less than Significant)	None required.	Less than Significant
Impact F.5: Operation of the project in combination with other developmental projects in the site vicinity would not contribute to cumulative hazards and hazardous materials impacts in the project area. (Less than Significant)	None required.	Less than Significant
Hydrology and Water Quality		
Impact G.1: Project construction would cause erosion and increase stormwater runoff resulting in an adverse water quality impact. (Less than Significant)	None required.	Less than Significant
Impact G.2: Excavation during project construction could intercept shallow groundwater, which could be contaminated. The groundwater if released into the waterways, would affect the surface water quality. (Less than Significant)	None required.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Hydrology and Water Quality (cont.)		
Impact G.3: Development of the project would result in a substantial change to drainage patterns and increase in impervious area, thereby increasing stormwater runoff volumes and the likelihood of erosion and flooding downstream. (Less than Significant)	None required.	Less than Significant
Impact G.4: The increased construction activity and new development resulting from the project, in conjunction with other past, present and reasonably foreseeable projects in the area would not result in cumulative impacts with respect to hydrology and water quality. (Less than Significant)	None required.	Less than Significant
Land Use and Planning		
Impact H.1: The project would result in new land uses on previously undeveloped land that would be incompatible with some surrounding land uses. (Significant)	None available.	Significant and Unavoidable
Impact H.2: Implementation of the project, including the proposed amendment to the *General Plan* and zoning reclassification, would result in changes in land uses within the Vine Hill/Pacheco Boulevard Area and would conflict with adopted applicable land use plans and policies. (Significant)	None available.	Significant and Unavoidable
Impact H.3: The proposed project, together with other developments in the immediate vicinity, would not physically divide an established community, and would not result in cumulative impacts with respect to applicable land use regulations, or existing uses. (Less than Significant)	None required.	Less than Significant
Noise		
Impact I.1: Construction activities with the project would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project and in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (Significant)	**Mitigation Measure I.1a:** All construction contractors shall be required to limit all noise-generating construction activities to the less noise-sensitive daytime hours between 8:00 AM and 5:00 PM, from Monday through Friday unless otherwise approved by the County. Construction activity that does not generate noise would be allowed from 7:30 AM to 5:00 PM, from Monday through Friday. No construction shall take place on weekends and State and federally mandated holidays as recognized by the Board of Supervisors unless otherwise approved by the County. **Mitigation Measure I.1b:** Construction contractors shall be required to implement the following noise control measures:	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Noise (cont.)		
Impact I.1 (cont.)	• Equipment and trucks used for project construction shall utilize the best available noise control techniques (*e.g.,* improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible); • Impact tools (*e.g.*, jack hammers, pavement breakers and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to approximately 10 dBA. External jackets on the tools themselves shall be used where feasible and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible; Stationary noise sources shall be located as far from adjacent receptors as possible and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible; and **Mitigation Measure I.1c:** The following list of measures shall be implemented to respond to and track complaints pertaining to construction noise: • Designate a Project Construction Complaint and Enforcement Manager to receive complaints and a procedure for notifying the appropriate County staff and the Sheriff's Office, if necessary; • Post signs on-site pertaining to permitted construction days and hours and complaint procedures and a Project Construction Complaint and Enforcement Manager to notify in the event of a problem; • Post listing of telephone numbers (during regular construction hours and off-hours); • Notify neighbors within 300 feet of the project construction area at least 30 days in advance of pile-driving activities about the estimated duration of the activity; and • A preconstruction meeting shall be held with the job inspectors and the general contractor/on-site project manager to confirm that noise mitigation and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.	
Impact I.2: Increased traffic from the operation of the project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. (Less than Significant)	None required.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Noise (cont.)		
Impact I.3: The project would introduce sensitive receptors to a noise environment with noise levels in excess of standards considered "normally acceptable" by the *Contra Costa County General Plan* for such uses. (Less than Significant)	**Mitigation Measure I.3a:** Detailed site plans for homes on lots 57 through 65 shall provide for backyard fences with no gaps or openings to allow the exterior noise standard for residential uses of 60 dBA, DNL to be met on these lots. Solid wood fences at least 7 feet in height would be required. For homes located on sloping lots that would not have rear yards but rather decks that extend over the hill, the exterior noise level shall be reduced to 60 dBA, DNL by constructing a solid barrier consisting of wood with a Plexiglas top at least 4.5 feet tall or an alternative that provides similar noise attenuation so that people seated on the deck would be shielded from noise emanating from I-680 and the railroad. **Mitigation Measure I.3b:** Interior noise exposure within homes, particularly those located on lots affected by noise from I-680 and the railroad shall be assessed by a qualified acoustical engineer when detailed site plans are available, to review if sound rated walls and windows would be required to meet the interior noise standard of 45 dBA, DNL. The results of the study shall be submitted to the County showing conceptual window and wall assemblies with Sound Transmission Class (STC) ratings necessary to achieve the noise reductions necessary for the project to satisfy the interior noise criteria within the noise environment at the project site. **Mitigation Measure I.3c:** Mechanical ventilation shall be provided to homes on lots 57 through 65 as the interior noise standards were found to be met only with the windows closed. This requirement may be waived if sound rate assemblies (as described in Mitigation Measure I-3b) are provided that provide additional attenuation to meet the interior noise standard.	Less than Significant
Impact I.4: The project would not expose people residing or working in the project area to aircraft noise levels in excess of standards in the Contra Costa County Airport Land Use Plan. (Less than Significant)	None required.	Less than Significant
Impact I.5: The project, together with anticipated future development in the area in general, would not result in a significant cumulative increase in noise levels in the area. (Less than Significant)	None required.	Less than Significant
Population and Housing		
Impact J.1: The project would result in an increase in the residential population within the area. (Less than Significant)	None required.	Less than Significant
Impact J.2: The project would not result in a permanent increase in employment within the area. (Less than Significant)	None required.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Population and Housing (cont.)		
Impact J.3: The project would increase the on-site population, but would not result in a cumulatively considerable contribution to population growth in area. (Less than Significant)	None required.	Less than Significant
Public Services and Utilities		
Impact K.1: The project would increase the demand for fire protection and emergency medical services, which would not result in the need for the provision of new or physically altered facilities, the construction of which would cause significant environmental impacts. (Significant)	**Mitigation Measure K.1:** The project sponsor shall equip all dwelling units with residential automatic fire sprinkler systems complying with the 2002 edition of the National Fire Protection Association Standard 13D, subject to the review and approval of the Contra Costa County Fire Protection District.	Less than Significant
Impact K.2: The project would increase the demand for police protection services, but would not result in the need for the provision of new or physically altered facilities. (Less than Significant)	None required.	Less than Significant
Impact K.3: The project would increase the demand for public school services, but would not result in the need for the provision of new or physically altered facilities. (Less than Significant)	None required.	Less than Significant
Impact K.4: The project would increase the demand for child care services, but would not result in the need for the provision of new or physically altered facilities. (Less than Significant)	None required.	Less than Significant
Impact K.5: The project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, nor include recreational facilities or require the construction or expansion of recreational facilities. (Less than Significant)	None required.	Less than Significant
Impact K.6: The domestic and emergency water demand generated by the project would not exceed water supplies available from existing entitlements and resources. (Less than Significant)	None required.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Public Services and Utilities (cont.)		
Impact K.7: The project would require or result in construction of new water facilities or expansion of existing facilities, the construction of which would cause significant environmental effects. (Significant)	**Mitigation Measure K.7a:** The project sponsor shall fund the design and installation of any necessary water main extension, additional pumps and meters, offsite pipelines improvements and reservoirs required to serve the project. Such a system shall be designed with a capacity and refill rate to ensure a minimum fire flow of 1000 gallons per minute from not more than one hydrant flowing for the duration of 120-minutes while maintaining 20-pounds residual pressure in the main. The final system design shall be subject to the review and approval of the Contra Costa County Fire Protection District.	Less than Significant
Impact K.8: The project would generate demand for wastewater utility service, which would require annexation of the project site into a Sanitary District. The project would result in expansion of existing wastewater collection system, the construction of which would not cause significant environmental effects. (Significant)	**Mitigation Measure K.8a:** The project sponsor shall work with the MVSD, CCCSD and LAFCO to annex the property into a sanitary sewer utility service provider district and secure an agreement for provision of wastewater utility service prior to receiving building permits. This agreement shall be obtained prior to recording the Final Subdivision Map. **Mitigation Measure K.8b:** The project sponsor shall fund the installation of any necessary sewer main extension, upgrades or replacements required to serve the project. The project sponsor shall enter into a sewer improvement agreement with the wastewater service provider and shall post security for sanitary sewer improvements prior to recording the Final Map.	Less than Significant
Impact K.9: The project would generate solid waste but would not exceed the permitted capacity of the landfill serving the project site. (Less than Significant)	None required.	Less than Significant
Impact K.10: The project would increase demand for electricity and natural gas services at the project site. (Less than Significant)	None required.	Less than Significant
Impact K.11: Development of the project, in conjunction with other past, present and reasonably foreseeable development in the Vine Hill/Pacheco Boulevard Area, would not result in cumulative impacts on public services or utilities. (Less than Significant)	None required.	Less than Significant
Transportation and Traffic		
Impact L1: Project construction would result in temporary increases in truck traffic and construction worker traffic. (Significant)	**Mitigation Measure L.1:** The project sponsor and construction contractor(s) shall develop and submit a Construction Management and Traffic Control Plan for the review and approval of the County's Public Works Department. The Construction Management and Traffic Control Plan shall be submitted to the Public Works Department at least 60 days prior to the initiation of construction activities: • A set of comprehensive traffic control measures, including scheduling of major truck trips, including grading haul trucks and deliveries, to avoid peak traffic hours, types of vehicles and maximum speed limits for each type of vehicle, expected daily truck trips,	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Transportation and Traffic (cont.)		
Impact L1 (cont.)	staging areas, emergency routes and access, detour signs if required, lane closure procedures, flag person requirements, signs, cones for drivers, a street sweeping plan and designated construction access routes. • Identification of haul routes for movement of construction vehicles that would minimize impacts on motor vehicle, bicycle and pedestrian traffic, circulation and safety, and specifically to minimize impacts to the greatest extent possible on streets in the project area. • Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures would occur.	
Impact L.2: Project-generated increases in heavy truck traffic on area roadways could result in substantial damage to or wear of public roadways. (Significant)	**Mitigation Measure L.2:** Prior to commencement of project construction activities, which would include any construction-related deliveries to the site, the project sponsor shall document to the satisfaction of the Contra Costa County Public Works Department, the road conditions of the construction route that would be used by project construction-related vehicles. The project sponsor shall also document the construction route road conditions after project construction has been completed. The project sponsor shall repair roads that are damaged by construction related activities to County standards and to a structural condition equal to that which existed prior to construction activity. As a security to ensure that damaged roads are adequately repaired, the project sponsor shall make an initial monetary deposit, in an amount to be determined by the Department of Public Works, to an account to be used for roadway rehabilitation or reconstruction. If the County must ultimately undertake the road repairs, and repair costs exceed the initial payment, then the project sponsor shall pay the additional amount necessary to fully repair the roads to pre-construction conditions.	Less than Significant
Impact L.3: The project would increase traffic volumes at nearby intersections. (Less than Significant)	None required.	Less than Significant
Impact L.4: The project would increase traffic volumes on I-680. (Less than Significant)	None required.	Less than Significant
Impact L.5: The project would increase traffic volumes on Pacheco Boulevard. (Less than Significant)	None required.	Less than Significant
Impact L.6: The project would increase traffic volumes on residential roadway segments near the project site. (Significant)	**Mitigation Measure L.6:** The project sponsor shall be required to implement the following measures: • Pave and improve the segment of Central Avenue that extends from approximately 100 feet east of Darcie Way (estimated 400 to 500 feet) to the project site access road. This segment would be improved to meet County design standards for a typical two-lane residential street. • Provide required and adequate signage indicating posted speed limit and warning of nearby pedestrian and bicycle activity and vehicle driveway activity.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR BAYVIEW RESIDENTIAL PROJECT

Impacts	Mitigation Measures	Significance after Mitigation
Transportation and Traffic (cont.)		
Impact L.6 (cont.)	• Pave and improve Palms Drive from the intersection at Arthur Road to the project site access. Palms Drive would be striped as a two lane facility and may require the prohibition of on-street parking in some areas. The County would review the roadway improvement plan and make appropriate determinations prior to improvements. • Install stop signs at the Palms Drive and Leabig Lane intersection approaches at Arthur Road. These approaches are currently uncontrolled and require traffic from these streets to yield to through traffic on Arthur Drive.	
Impact L.7: The project would increase the demand for parking in the project area. (Less than Significant)	None required.	Less than Significant
Impact L.8: The project would increase ridership on public transit serving the project area. (Less than Significant)	None required.	Less than Significant
Impact L.9: The project would increase the potential for pedestrian and bicycle safety conflicts. (Less than Significant)	None required.	Less than Significant
Impact L.10: The project would increase on-site vehicular traffic, including potential emergency services traffic, from the project site. (Significant)	See **Mitigation Measure L.6**.	Less than Significant
Impact L.11: Traffic generated by the project would contribute to cumulative traffic at local intersections in the project vicinity in 2030. (Less than Significant)	None required.	Less than Significant
Impact L.12: Traffic generated by the project would contribute to cumulatively significant impacts on “Routes of Regional Significance” in the project vicinity in 2030. (Significant)	**Mitigation Measure L.12:** The project applicant shall contribute their fair share to all applicable development impact fee programs, including the Central County Regional Impact Fee, which is designed to fund improvements to regional facilities including I-680.	Significant and Unavoidable

CHAPTER 3
Project Description

A. Introduction

The proposed Bayview Estates Residential Project ("project") consists of a residential subdivision located south of Central Avenue and east of the I-680, in the Vine Hill Area of unincorporated Contra Costa County. The project site consists of a single parcel (Assessor's Parcel Number 380-030-046). The project would include the development of 163 single-family homes and associated internal roadways on 42 acres, as well as open space parcels of approximately 11.6 and 15 acres. The project would retain a hilltop of approximately 10 acres as disturbed and undeveloped land. To accommodate the proposed use and density, the proposed project includes a zoning reclassification, new land use designation and changes to the Vine Hill/Pacheco Boulevard area policy language that would require an amendment to the *General Plan*. The major project components would include a grading plan that proposes to substantially alter the existing topography of the project site, provision of access and circulation via a new internal roadway system, repair and/or upgrade to existing utility lines and an extension of utility lines throughout the project site.

B. Project Sponsor's Objectives

CEQA *Guidelines* Section 15124(b) requires that the Project Description of an EIR contain a statement of objectives for the proposed project. The project sponsor, Discovery Builders, Inc., seeks to develop a residential subdivision project in the Vine Hill/Pacheco Boulevard area of unincorporated Contra Costa County. The sponsor's objectives for the project include the following:

- build single-family houses in the Vine Hill area near Martinez, CA;
- build 163 lots on 78.28 total acres with 36 acres comprised of open space; and
- design the subdivision with two points of entry to the site, one through Palms Drive and the other on Central Avenue.

C. Project Location and Characteristics

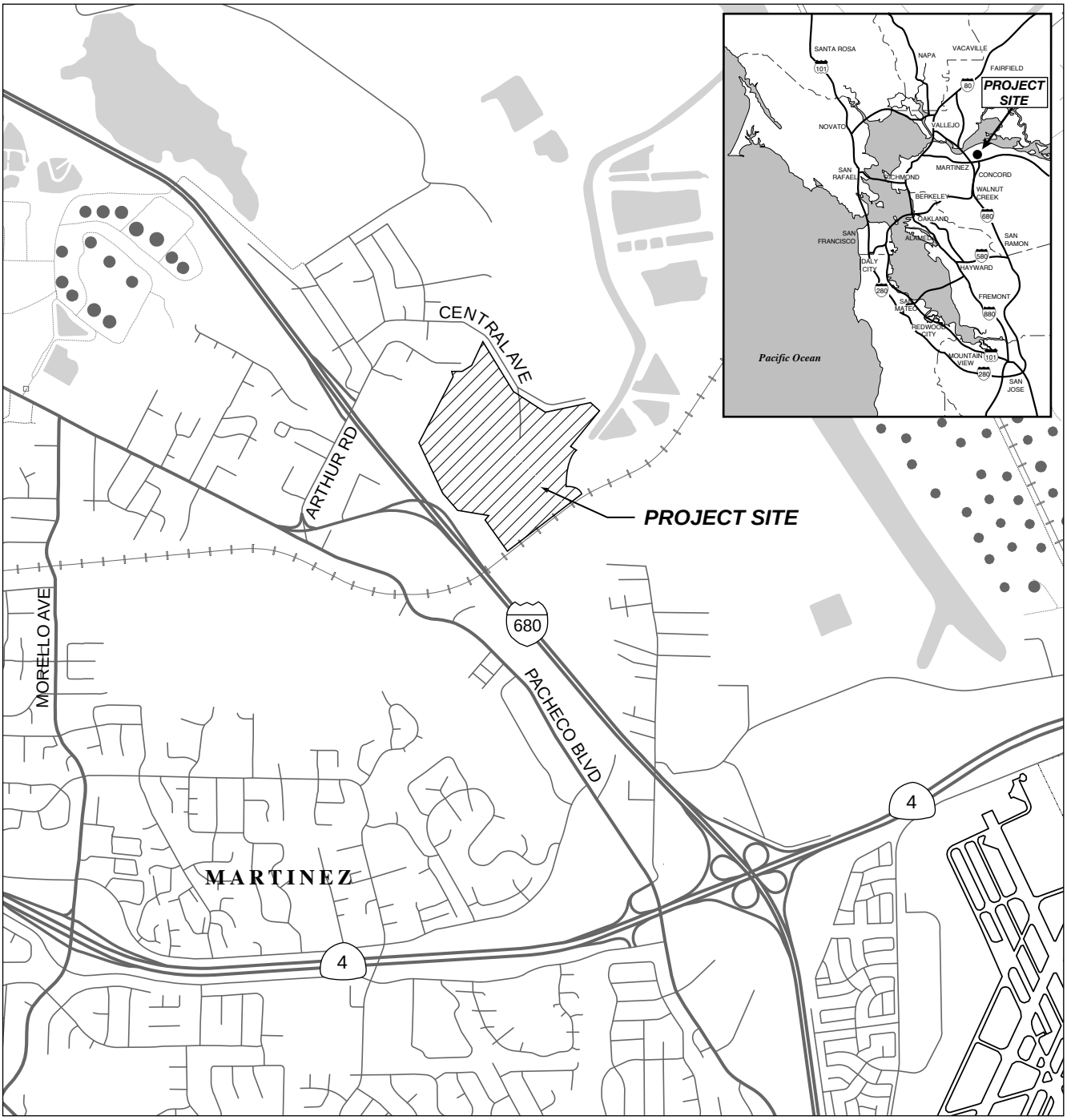
Project Location and Setting

The Vine Hill/Pacheco Boulevard area is one of the County's unincorporated communities along the northern I-680 corridor. The community is located in North Central Contra Costa County, east of the City of Martinez and northwest of the City of Concord. The proposed Bayview Estates residential development is located in the Vine Hill/Pacheco Boulevard area, which is developed with roads, trails, the installation of gas pipelines and land uses including a landfill, wastewater treatment facilities and residential areas. The project site is bounded by I-680 and the Contra Costa Canal to the southwest, a residential development on Palms Drive to the northwest, a dirt road separating it from Acme Landfill property to the east and northeast and the Burlington Northern Santa Fe Railroad tracks to the south. **Figure 3-1** displays the project location and site boundary. The project site is owned by Discovery Builders, Inc. and is currently undeveloped.

The immediate vicinity of the project site is characterized by a variety of land uses. The I-680 runs in a northwest-southeast direction along the southwest boundary of the project site. Containers used for a self-storage business separate a portion of the project from I-680 to the west. The area directly west of the freeway supports a mixture of residential, commercial and light industrial uses. Further west, the land is dominated by residential development including the County's unincorporated Mountain View neighborhood and suburban areas of the City of Martinez. Parcels to the northwest of the site and east of the freeway are characterized by a cluster of single family homes on lots ranging in size from approximately 7,000 square feet to one acre. Further northwest is Waterbird Regional Preserve, an approximately 198-acre wetland and associated upland area managed jointly by the East Bay Regional Park District, the Mt. View Sanitary District, the Contra Costa County Mosquito and Vector Control District and the California Department of Fish and Game.

Lands to the northeast, east and south are mostly undeveloped properties zoned and partly used for heavy industrial purposes. The southern boundary of the project site abuts the Burlington Northern Santa Fe Railroad tracks. A combination of undeveloped lands and recreational vehicle storage occupy the area immediately south of the railroad tracks. The majority of the land to the north and northeast of the project site is property of the Acme Landfill. While the landfill is currently mostly inactive, a fully operational refuse transfer station is located approximately 0.3 miles north of the project site. A former firewood and wood chipping facility abuts the project site to the east. In addition, the heavily industrialized land areas supporting Shell Martinez Refinery and the Tesoro Refinery are located approximately one mile northwest and east respectively. Pipelines carrying crude oil and refined petroleum products (gasoline, diesel fuel and jet fuel) run under Central Avenue and intersect the project site along a wetland area on the northeastern boundary.

The approximately 78-acre project site consists of sloping land on the east, rising sharply to the summit of a prominent hill ("Vine Hill") on the west. Elevations range from four to 283 feet above mean sea level ("msl"). The property supports permanent and seasonal wetlands and an



SOURCE: ESA

Bayview Residential Project . 208078

Figure 3-1
Project Location

extensive band of freshwater marsh across its southern portion. A valley oak woodland covers a small area mid-slope on the north-facing side of Vine Hill. Within the grove, 34 native oak trees, each with a trunk diameter of 6.5 inches or larger, fit the criteria for a "Protected Tree" as defined in the *Contra Costa Zoning Code* ("*Zoning Code*"). Many of these trees have been vandalized and exhibit chainsaw cuts on the west side of their trunks approximately four feet off of the ground.

The site is currently undeveloped although scarred from illegal motocross activity. As a part of the Vine Hill/Pacheco Boulevard Area community, the project site falls within the area permitted to be developed in accordance with the voter approved Urban Limit Line as established through adoption of Measure C-1990. The site is currently zoned Heavy Industrial ("H-I") and is designated as Heavy Industry ("HI") in the *Contra Costa County General Plan* ("*General Plan*") Land Use Element.

Project Components/Characteristics

For purposes of project review, the project area boundary is more generally described as being bounded on the southwest by I-680, on the northwest by residential development, on the east and northeast by Acme Landfill property and on the south by the Burlington Northern Santa Fe Railroad tracks. The proposed project would develop one parcel for a total of 163 single-family detached homes and internal roadways on 42 acres, and two (approximately 11.6 acres and 15 acres) open space parcels. The project also would include a hilltop of approximately 10 acres which would remain undeveloped (see **Figure 3-2**, Parcel A). The proposed lot sizes would range from 6,000 square feet to over 15,000 square feet. The project would include a range of generally three, four and five bedroom homes ranging in size from approximately 1,800 to 3,500 square feet. The project would include a mix of single-story and two-story houses; the distribution between single- and two-story houses has not yet been determined.

To support the development of 163 housing lots and associated internal roadway system, the project sponsor proposes a grading plan that would substantially alter the existing topography of the project site. One major grading area would occur on Parcel A on the western portion of the project site (see Figure 3-2). The elevation at the crest of Vine Hill, approximately 283 feet above msl, would be lowered by roughly 30 feet to approximately 250 feet above msl. Grading in this area would consist of a cut slope covering an area of approximately 4.5 acres. The resulting steep slope would be separated by drainage terraces into 30-foot vertical segments and would terminate in a 20-foot-wide debris bench just upslope from the first tier of residential lots. The onsite materials proposed for excavation have been evaluated and determined satisfactory for reuse as fill placement. According to the project sponsor, this residual fill would be placed along the southern and eastern perimeters of the project site. Based on preliminary calculations on the proposed grading plan, the cut and fill materials would be equal to one another in volume and no off-site hauling of cut spoils would be required. Over the full project site, the maximum fill elevation would be approximately 59 feet and the maximum cut elevation would reach approximately 135 feet. Residential lots would be padded with sloping rear and side yards. See Section 4.E, *Geology and Soils*, for additional details on the existing topography and project grading plan.

NOTE: Contour lines represent 5-foot intervals

SOURCE: Isakson & Associates Inc.

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Figure 3-2

Project Vesting Tentative Map

The project would preserve three undeveloped parcels on the project site. Parcel A, an approximately 10-acre parcel on the western portion of the property, consists of the steep crest of Vine Hill. Although the grading plan would alter the natural topography on this parcel and lower the peak elevation of Vine Hill by approximately 30 feet, the parcel would be retained as visual open space. Parcel B, an approximately 15-acre parcel on the southeastern perimeter of the project site, would be preserved as marsh and overflow open space area. Finally, the project proposes an open space and bio-retention area of approximately 11.6 acres on the eastern side of the property.

The area would preserve the existing meadow, marsh lands and open-water basin. Open space amenities would include a wildlife viewing platform, and a paved path along the open space's western edge. The project would involve removal of the existing oak grove, including the 34 native oaks protected under the *Zoning Code*. The project would include on-site landscaping, which would generally be comprised of shrubs and small trees. A variety of small trees would line both sides of all proposed internal streets. In addition, an array of shrubs and trees would surround the western half of the proposed 11.6-acre open space area.

Proposed Access and Circulation

Circulation is proposed through the residential development on a new internal roadway system. Most streets within the development would provide access and circulation internal to the development, but would not provide ingress or egress from the project site. Palms Drive, an existing paved road originating in the mostly residential area to the northwest, would be extended to encircle the development and link the new roadway system. Streets C, D, E and F would connect on either end with Palms Drive. Street B would link Palms Drive and Central Avenue and A Court would originate from Palms Drive and terminate in a cul-de-sac.

The project would include two points of entry to the site. Palms Drive on the northern end of the project site, would provide entry to the development. At approximately 30-feet in width, the existing portion of Palms Drive is too narrow to accommodate two lanes of moving traffic though it currently provides two-way passage. In addition, the proposed B Street would connect with Central Avenue and provide an ingress and egress point also on the northern boundary of the project site.

Infrastructure

The project would connect to existing utilities through connections under Central Avenue to the north, Palms Drive to the northeast and existing utility lines within the project site where present. To provide adequate services, the project would extend utility lines throughout the project site. Some existing utility lines would require repair and/or upgrade to serve the proposed development. The project site currently falls within two sanitary sewer districts: the Central Contra Costa Sanitary District and the Mt. View Sanitary District. The project would require annexation of the entire property into the Mt. View Sanitary District which would ultimately serve the development. See Section 4.K, *Public Services and Utilities*, for additional information regarding planned upgrades and infrastructure extensions.

General Plan Amendments and Rezoning

Neither the *General Plan* nor the *Zoning Code* would allow for the residential use on the project site. Therefore, the project proposes a *General Plan* amendment and a zoning reclassification as required to permit the proposed development.

The project site is designated as Heavy Industry ("HI") in the *General Plan Land Use Element*, which allows for activities requiring large areas of land with convenient truck and rail access. Permitted HI land uses, such as metalworking, chemical or petroleum product processing and refining or heavy equipment operation, are not typically compatible with residential uses in close proximity due to noise or other conditions requiring spatial separation. The project sponsor proposes to amend the *General Plan* to incorporate new proposed land use designations for the project site. The project would amend the Land Use Map to reflect the proposed land use designation changes from Heavy Industry (HI) to Single Family Residential-Medium Density (SM). A Single Family Residential-Medium Density designation permits between 3.0 and 4.9 single family units per net acre and sites up to 14,519 square feet. The *General Plan* assumes that, with an average of 2.5 to 3.0 persons per household, population densities within this land use designation would normally range between about 12.5 to about 22 persons per acre. The project as proposed would conform to these requirements**.**

The project site falls within the County's Heavy Industrial ("H-I") zoning district which allows for a range of industrial and manufacturing uses. Therefore, the project also proposes a zoning reclassification to Planned Unit District ("P-1"). Permitted uses within a P-1 district include detached single-family dwellings on legally established lots and associated auxiliary structures and uses. The project would reference the R-6 development standards but would be rezoned to P-1 in order to be consistent with the proposed General Plan Amendment to SM. There is no minimum size or dimensional requirements for a P-1 but generally these lots do conform to the R-6 zoning district lot requirements. Structures generally are limited to two and one half stories and 35 feet in height. The project as proposed would conform to these requirements.

As a part of the General Plan Amendment, the project includes changes to policy language in the Land Use Element of the *General Plan*. Without the amendment, Policy 3-101 which is specific to the Vine Hill/Pacheco Boulevard area and applicable to the project would prohibit development on the project site.

> *Policy 3-101:* The scenic assets and unstable slopes of the Vine Hill Ridge are to be protected for open space/agricultural use.

The project would amend the language to accommodate the grading and residential development as proposed.

> *Policy 3-101:* The scenic assets will, in some measure, be preserved while still allowing safe, feasible development of the property. Grading of these scenic assets shall be permitted to allow for development granted that the scenic remainder parcels are to be protected for open space/agricultural use.

See Section 4.H, *Land Use and Planning*, for an additional description of the existing and proposed *General Plan* designations.

Project Construction

Project construction is expected to begin sometime in 2010 and would occur over one to three years depending on weather conditions and project phasing. Construction staging could occur primarily on the site and is anticipated to include a storage container, mobile office, parking, materials area and other construction equipment. Noise generating construction activity would be limited to Monday through Friday from 8:00 a.m. to 5:00 p.m. unless otherwise approved by the County. Construction activity that does not generate noise would be allowed from 7:30 a.m. to 5:00 p.m. All construction activity is excluded on State and Federal holidays as recognized by the Board of Supervisors unless otherwise approved by the County. The project is estimated to be a balanced cut and fill operation.

D. Approvals and Permits

County approvals that would be required include:

- Contra Costa County Planning Commission recommendation for and County Board of Supervisors certification of this EIR;
- Contra Costa County Planning Commission recommendation of approval of the tentative subdivision map; and
- Contra Costa County Board of Supervisors adoption of General Plan Amendment to redesignate the subject site from Heavy Industry (HI) to Single Family Residential-High Density (SH) and adoption of rezoning from Heavy Industrial (H-I) to Planned Unit District.

Additional approvals and/or permits could also be required from:

- Regional Water Quality Control Board, Region 2 for an National Pollutant Discharge Elimination System (NPDES) permit for construction dewatering and Clean Water Act Section 401; and
- Contra Costa County Flood Control and Water Conservation District approval of Drainage Master Plan.

CHAPTER 4
Environmental Setting, Impacts and Mitigation Measures

A. Aesthetics

Introduction

This analysis discusses the potential visual effects associated with the project (visual character, views and light and glare). The evaluation considers existing visual conditions and utilizes computer-generated photo simulations illustrating the "before" and "after" conditions of the project site and its surroundings. Visual simulations are based on the Vesting Tentative Map provided by the project applicant. The potential impacts on the existing natural and developed environment are also described, focusing on the compatibility of the project with existing conditions. The aesthetic impact analysis is based on field observations of the project site and vicinity on March 12, 2008, as well as a review of ground-level photographs of the project area and the project Vesting Tentative Map.

Setting

Regional Context

Contra Costa County stretches approximately 40 miles from west to east and approximately 20 miles from north to south. The County covers a total of 805 square miles, of which approximately 732 square miles are land with the remainder consisting of water areas (Contra Costa County, 2005). The physical environment is diverse, with the western and central areas providing much of the urban and suburban character and the eastern portion containing most of the agricultural communities. The topography of the project area includes hilly terrain, as well as the low-lying and relatively flat coastal terrain that gradually slopes down to the edges of the San Pablo and Suisun Bays. The shoreline area provides a scenic setting with views of the Bays. Vegetation in the project area consists primarily of grassland in the upland areas with scattered trees and salt marsh vegetation along the shoreline. The natural environment is the main attribute of the project area's positive visual character.

The project site is situated near the northern end of a continuous belt of urban and suburban development that extends southward for nearly 30 miles, to the City of Pleasanton in central Alameda County. The site, which is east of the City of Martinez and northwest of the City of Concord, is in one of the County's unincorporated communities and also referred to as the

Vine Hill/Pacheco Boulevard Area. Prominent urban features within the project area include I-680 and a mixture of residential, commercial and industrial uses west of the project site, including the County's unincorporated Mountain View neighborhood and additional suburban areas of the City of Martinez. Pockets of residential neighborhoods amongst mostly large scale industrial uses occupy the land east of I-680 from State Route 4 ("SR 4") northward to the Bay.

Lands north and northeast of the project site are characterized by the open grassy hills of the Waterbird Regional Preserve and the inactive portions of the Acme Landfill property. This open area is punctuated by industrial uses including the active Contra Costa Transfer and Recovery Station (approximately 0.3 miles north of the project site) and a former firewood and wood chipping facility which abuts the project site to the southeast). In addition, several reservoirs surround the project site, including a water holding basin approximately 0.25 miles east of the site, the Mallard Reservoir about 2 miles east of the site and the Martinez Reservoir, about 1.2 miles west of the site. Further north, the Shell Martinez Refinery and the Tesoro Refinery, located approximately 1 mile northwest and east of the project site respectively, dominate the landscape. Refinery lands are characterized by tall stacks, vapor plumes, and large storage tanks of various shapes and sizes.

The Burlington Northern Santa Fe Railway abuts the project perimeter to the south. A combination of undeveloped lands and a recreational vehicle storage lot occupy the area immediately south of the railroad tracks. The industrial operations of the Central Contra Costa Sanitary District's wastewater treatment plant and household hazardous waste collection facilities are located 1 mile southeast of the project, just north of SR 4. Long-range views of the Diablo mountain ranges and Mount Diablo are visible southeast of the project site.

Residential areas near the project site are typically single-family detached dwelling units on landscaped parcels. The surrounding neighborhoods are generally located on low-lying terrain; mature trees and landscaped vegetation are visible along street corridors and rolling, undeveloped hillsides can be seen bordering neighborhoods south and west of the project site.

Existing Visual Character

The existing visual character of the project site is determined by the attributes (color, form, texture) of specific site features. Patterns that these features have assumed as a result of natural and/or cultural processes also contribute to the existing character. Evaluation of potential project impacts on the existing visual character of the site requires analysis of the type and degree of change in visual attributes and patterns that could result from implementation of the project. Perceptions of changes in the physical characteristics of a site may differ with respect to issues of importance and value and are therefore subjective. This analysis considers only publicly available views of the project site.

Views and Scenic Vistas

In 1963, the California Legislature established the State's Scenic Highway Program, intended to preserve and protect scenic highway corridors from changes that would diminish the aesthetic

value of lands adjacent to highways. There are no designated or eligible scenic highways or roadway segments within the project area.

The *Contra Costa County General Plan* ("*General Plan*") Open Space Element contains policies to protect scenic ridges (Contra Costa County, 2005). The shoreline and hills along the Carquinez Strait between Crocket and the City of Martinez are described in the *General Plan* as having "scenic beauty" and preservation of these areas is encouraged. The project, however, is not in the vicinity of these scenic areas (Contra Costa County, 2005).

Visual Character and Quality

The assessment of existing visual character and quality considers the following general descriptive categories: site location, landform, land use and vegetation.

The project site is an approximately 78-acre parcel located south of Central Avenue and east of I-680 in the Vine Hill/Pacheco Boulevard Area of unincorporated Contra Costa County. The site consists of nearly level to gently sloping land on the east, rising sharply to the summit of a prominent hill on the west known as Vine Hill. The most visually distinctive element of the site is the extreme topographic variation. Elevations at the project site range from 4 to 283 feet above mean sea level (msl). The project site is undeveloped and is currently an open, grassy field although scarred from illegal motocross activity.

Although the site is undeveloped, vegetative features on the site contribute to the natural landscape of the surrounding area. As discussed in detail in Section 4.C, *Biological Resources*, the site contains non-native annual grasses and other weedy, non-native plant species. A valley oak woodland covers a small area mid-slope on the north-facing side of Vine Hill. The woodland is dominated by valley oak, with a few coast live oak and California bay trees also present. Within the grove, 34 native oak trees, each with a trunk diameter of 6.5 inches or larger, fit the criteria for a "Protected Tree" as defined in the *Contra Costa Zoning Code* ("*Zoning Code*"). The property also supports permanent and seasonal wetlands and an extensive band of freshwater marsh across the southern portion of the site.

Public View Corridors

The project site is visible from several public view corridors. General public view corridors include public roadways, residential communities and commercial and industrial areas. The project site can be seen by north- and southbound traffic traveling along I-680. The northern slope, native oak trees and crest of Vine Hill are visible from the adjacent Vine Hill residential area north of the project site. The southern slope and crest of Vine Hill can be seen from Central Avenue on the property's eastern boundary. Long-range views of the northern slope and crest of Vine Hill are also visible from the Waterbird Regional Preserve, approximately 1 mile north of the project site.

Computer-generated photo simulations illustrating the "before" and "after" conditions of the project site and its surroundings are shown in Figures 4.A-2 to 4.A-5. They include views of the project site from I-680, Central Avenue, Irene Drive at Jane Court and from the Waterbird Regional Preserve.

A map showing the locations of the different viewpoints with respect to the project sight is shown in **Figure 4.A-1**. These figures, along with a detailed discussion comparing the "before" and "after" conditions of the project site and surroundings are included in Impact A.2 below.

It is important to note that although the visual simulations provide a reliable depiction of how the project would look on the project site, the simulation is limited in the sense that it only provides limited viewpoints and cannot demonstrate all views of the project site with the project in the setting. In addition, it cannot provide the more dynamic views that are created when one moves (i.e., driving, walking, cycling) along the perimeters of the project site. Since the project design is still preliminary, the visual simulations are based on the architectural details of similar past projects.

It should also be noted that design details represented in the simulations are preliminary and subject to change pending the County's design review of the project (separate from the considerations addressed in this document under CEQA). However, the simulation focuses on general building massing and height and is sufficient in detail to make an assessment of the proposed design's potential aesthetic impacts.

Regulatory Framework

Local Plans and Policies

Contra Costa County General Plan

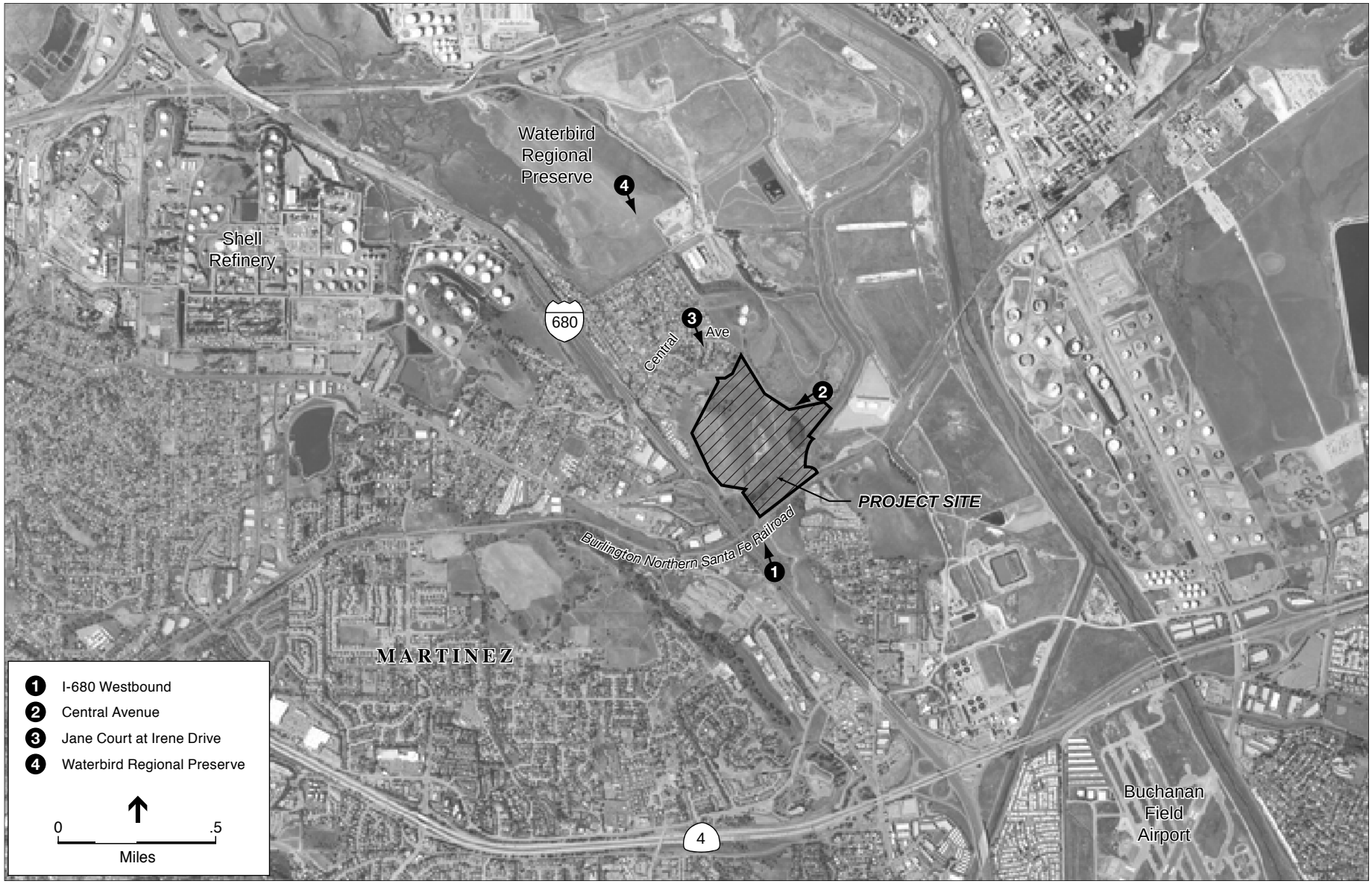
The *Contra Costa County General Plan* contains policies that regulate visual resources in the proposed project area. These policies are included in the Open Space Element and the Land Use Element sections of the *General Plan*.

The Land Use Element of the *General Plan* includes the following policy that is applicable to the project with respect to visual quality:

> *Policy 3-101:* The scenic assets and unstable slopes of the Vine Hill Ridge are to be protected for open space/agricultural use.

The Open Space Element of the *General Plan* includes the following policy that is applicable to the project with respect to visual quality:

> *Policy 9-14:* High quality engineering of slopes shall be required to avoid soil erosion, downstream flooding, slope failure, loss of vegetative cover, high maintenance costs, property damages and damages to visual quality. Particularly vulnerable areas should be avoided for urban development. Slopes of 26 percent or more should generally be protected and are generally not desirable for conventional cut-and-fill pad development. Development on open hillsides and significant ridgelines shall be restricted.



SOURCE: GlobeXplorer; ESA

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Figure 4.A-1
Viewpoint Map

The Land Use and Open Space Elements also contain goals and policies that seek to protect scenic ridges and are summarized as follows:

- Encourage aesthetically and functionally compatible development which reinforces the physical character and desired images of the County.
- Protect major scenic ridges, to the extent practical, from structures, roadways, or other activities which would harm their scenic qualities.
- Preserve and protect areas of identified high scenic value, where practical and in accordance with the Land Use Element map.

Impacts and Mitigation Measures

Significance Criteria and Methodology

Based on Appendix G of the CEQA *Guidelines*, implementation of the project would have a significant impact related to aesthetics if it would:

- Have a substantial adverse affect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Approach to Analysis

With acknowledgment that visual character and quality are subjective interpretations, this analysis relies primarily on the physical elements of the proposed project illustrated in exhibits submitted by the project sponsor for this analysis. Aesthetic effects are measured by the amount of visual change adversely affecting an area's perceived aesthetic value or the conditions of the setting. A highly visible change resulting from a project that is incompatible with the setting or is not pleasing to look at would contribute to generating a significant adverse aesthetic impact. As previously mentioned, factors to be considered include site location, landform, vegetation and land use. Examples include the physical layout of constructed elements with respect to each other and existing structures, the open and closed spaces defined between structural elements, the density or intensity of development, scale relationships between existing and proposed structures, site landscaping and other features of development.

Adverse aesthetic impacts would also normally be expected to result from the removal of vegetation that enhances the appearance of existing conditions. Exceptions would include vegetative massings or plant specimens that are haphazard in placement with respect to one

another, show evidence of crowding and overgrowth, retain poor health indicators or otherwise do not significantly contribute to the aesthetic quality of the setting.

Adverse aesthetic impacts would be expected during site construction where excavation, grading and materials and equipment storage occur. This would be short-term, lasting only during the construction period. Adverse aesthetic impacts would be expected to result from any new lighting fixtures that introduce point sources of light or glare that interfere with nighttime views.

Impacts

Impact A.1: Construction of the project would create temporary aesthetic nuisances associated with project construction and grading activities. (Significant)

Project construction activities would result in temporary exposure of graded surfaces, construction debris and the presence of construction equipment and truck traffic. Construction equipment for grading activities would be stored at various locations throughout the project site. Visual buffering along the perimeter of the project during construction phases on the site would reduce these visual disruptions, particularly from Central Avenue and Palms Drive. In addition, the identification and maintenance of staging areas away from heavily traveled roadways and sidewalks would reduce potentially significant, short-term impacts. Implementation of the following mitigation measures would reduce short-term aesthetic impacts to less-than-significant levels:

Mitigation Measure A.1: The project shall incorporate into all construction contracts and ensure implementation of the following measures:

- To the extent feasible, during all site preparation and exterior construction activities, a screened security fence shall be placed and maintained around the perimeter of the project site. Visual screening along Central Avenue and bordering the perimeter of the property shall be placed and maintained and removed upon completion of construction work. The County shall determine the appropriate height, material and placement of such fencing, as appropriate and effective given the relative change in elevation and viewpoints to the site.

- Construction staging areas shall be located in the interior of the project site, away from the property boundary and remain clear of all trash, weeds and debris etc. Construction staging areas may include other areas of the project site when necessary, but shall be located away from adjacent properties and I-680 to minimize visibility from public view to the extent feasible.

Significance after Mitigation: Less than Significant.

Impact A.2: The project would alter the existing visual character of the project site, and would substantially degrade the existing visual quality of the site and its surroundings. (Significant)

The project would substantially alter the visual character of the site. The project would include the development of 163 mostly two-story single-family detached residences. Residences would be separated by lawns with a range of distance from 10 to 30 feet and would be built in some sections to conform to the downward sloping topography. The proposed lot sizes would range from 6,000 square feet to over 15,000 square feet. In general, the project proposes three, four and five bedroom homes ranging in size from about 1,800 to 3,500 square feet. Most streets within the development would provide internal road access and circulation. A variety of small trees would line both sides of all proposed internal streets and street lighting would be interspersed in the neighborhood. On-site landscaping would generally be comprised of shrubs and small trees.

The project's grading plan would substantially alter the existing topography of the project site, including lowering the elevation at the crest of Vine Hill by roughly 30 feet, from approximately 283 above msl to about 250 above msl (see Chapter 3, *Project Description*, for more detail) to enable the development. Grading on the project site would include a cut slope covering an area of approximately 4.5 acres. The resulting steep slope would be separated by drainage terraces into 30-foot horizontal segments and would terminate in a 20-foot-wide debris bench just upslope from the first tier of residential lots. The residual fill would be placed along the southern and eastern perimeters of the project site. Some residential lots would include sloping rear yards and side yards. See Section 4.E, *Geology and Soils*, for additional details on the existing topography and project grading plan.

Viewpoint 1: I-680

Viewpoint 1 in **Figure 4.A-2a** shows the visual character of the project site from I-680 looking northeasterly at street level elevation. Views of the site include hilly, open grassland and small bushes and trees along the property line and base of the hillside. Vine Hill can be seen in the center of this perspective. The Burlington Northern Santa Fe Railway also can be seen where it intersects Vine Hill and an adjacent hillside through a small valley. A utility transmission tower is visible at the base of Vine Hill with electrical lines running parallel to the railway in an easterly direction. An unpaved road can be seen to the left at the base of Vine Hill. The property site's cyclone fence is also visible in the foreground.

Figure 4.A-2b depicts Viewpoint 1 with the project. Although the shape and form of the hilltop would generally be the same as in Figure 4.A-2a, the crest of would be notably lower, appearing just below the electrical wires of the utility line. In addition, the north and east facing steep slopes of the crest of Vine Hill (Parcel A, see Figure 3-2 in Chapter 3, *Project Description)* would be separated into 30-foot vertical segments by drainage terraces. The color and shape of the homes would be visible from this viewpoint, as well as the rear windows and doors of some of the residences.

a - Existing

b - Simulation

SOURCE: Vallier Design Associates

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Figure 4.A-2

Viewpoint 1 / I-680 Westbound

Viewpoint 2: Central Avenue

Viewpoint 2 in **Figure 4.A-3a** shows the visual character of the project site from a public viewpoint area on Central Avenue, looking westerly at the project site. The southeasterly slope and peak of Vine Hill can be seen from this vantage point. The property's mostly grassy and weedy terrain is visible, as well as some areas of natural erosion and various sections of scarring due to illegal motocross activity on the site. The property site's cyclone fence, interwoven with wooden panels, can be seen in the foreground and abuts the roadside. A short row of tall eucalyptus trees runs along Central Avenue inside the property line. Rolling hills and vegetation southwest of the project site are visible in the background.

Figure 4.A-3b depicts Viewpoint 2 with the project in place. The project would retain the freshwater marsh, which would remain visible to the left and in front of the viewpoint. Weedy grassland and vegetation common in riparian and wetland habitats still would be seen along the border of Central Avenue, separating the marsh from the roadside. At the marsh's northern perimeter, the project's one- and two-story residential structures would be visible on an elevated embankment. The ridge of the embankment would be aligned with 15-gallon trees, which would consist of plants from the conceptual landscape plan: Blackwood Acacia, European Hackberry, Maidenhair Tree and Cork Oak. Although the southeast-facing slope would still be visible, Vine Hill's altered form and reduced size would reduce its visual prominence and would reveal more open sky in the upper right portion of this perspective. The long-range views of rolling hills and vegetation southwest of the project would remain unchanged from this vantage point.

Viewpoint 3: Irene Drive at Jane Court

The photo in Viewpoint 3 in **Figure 4.A-4a** is taken from the Vine Hill neighborhood, near the intersection of Irene Drive and Jane Court, adjacent to and north of the project site. Looking south from this point, the crest of Vine Hill is visible above the existing rooftop. Oak trees cover a small area mid-slope on the north-facing side of Vine Hill. Single and two-story homes of the existing neighborhood occupy the foreground.

Figure 4.A-4b depicts Viewpoint 3 with the project. Here, the oak trees and other weedy vegetation mid-slope on the north-facing side of Vine Hill would be removed. From this vantage point, the crest of the hill would appear to move to the right while the bulk of the hill, formerly occupying the center of the view, would be reduced in prominence to reveal more of the sky behind. Several project rooflines and residential structures would be visible above the street-level homes. In addition, drainage terraces would be visible along the eastern profile of the hillside from this perspective. The terraces would be constructed in an alternating pattern and would be separated by a distance of about 30 feet.

Viewpoint 4: Waterbird Regional Preserve

Viewpoint 4 in **Figure 4.A-5a** is seen from on Meadowlark Ridge Loop Trail toward the southeastern end of the Waterbird Regional Preserve, looking southeast toward the project site. The crest of Vine Hill and oak trees covering a small area mid slope of the hill can be seen from this viewpoint. A portion of Mount Diablo can be seen to the left of the project site and

a - Existing

b - Simulation

SOURCE: Vallier Design Associates

Bayview Residential Project . 208078

Figure 4.A-3

Viewpoint 2 / Central Avenue

a - Existing

b - Simulation

SOURCE: Vallier Design Associates

Bayview Residential Project . 208078

Figure 4.A-4

Viewpoint 3 / Jane Court at Irene Drive

a - Existing

b - Simulation

SOURCE: Vallier Design Associates

Bayview Residential Project . 208078

Figure 4.A-5

Viewpoint 4 / Waterbird Regional Preserve

grasslands occupy the immediate foreground. Residential land uses characterize the area midground between the grassy area and the project site as well as areas to the west of the site.

Figure 4.A-5b depicts Viewpoint 4 with the project. From this vantage point, the crest of Vine Hill appears visibly lower and the valley oak woodland has been removed to accommodate the project. The rooftops of the residential homes can be seen, as well as the proposed development's internal roadway system.

As discussed above, the site contains vegetative features that contribute to the area's natural landscape, such as the permanent and seasonal wetlands, freshwater marsh and a valley oak woodland. The site is currently scarred by illegal motocross activity and there are numerous bulldozer push piles in various portions of the project site, along with a trash deposit area in the northwest corner of the site (see Section 4.D, *Cultural Resources).*

The project would not represent an isolated intrusion into an exceptional or unusual visual environment since design would be similar in scale to the adjacent and nearby development. Overall the project would change the existing undeveloped, grassy land by adding built elements and introducing active residential and recreational uses. Specifically, the visual character would be altered by reducing the height of Vine Hill by roughly 30 feet and by the proposed one- to two-story single family residences and site improvements (landscaping, roadways, etc.). Given the current vacant and abandoned "feel" of the site, aspects of the new residential development, exclusive of the grading, could be considered to contribute to a positive effect on the visual character of the area. However, the project as a whole, including the proposed changes in elevation, shape and form of the existing topography, would degrade the existing visual quality of the site.

Mitigation sufficient to fully avoid significant degradation of the project site's existing visual quality would substantially alter the project as proposed. Therefore, no further mitigation is proposed and the project impact would remain significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Impact A.3: The project would not have a substantial adverse effect on a scenic vista or adversely affect scenic resources along any designated scenic highway. (Less than Significant)

Views of and through the project site would be altered by new residential structures and landscaping, as well as an internal roadway system and other site improvements. Views from the project site include the Diablo mountain range beyond the Tesoro Refinery east and south of the project site and smaller, rolling hills interspersed between the refinery and the project site. These views would not be affected by the project because the residential development would be built primarily at lower-lying elevations. Residential structures built along the contours of Vine Hill on the southern slope would be obscured by the existing hillside and therefore would not further obscure any scenic views already obstructed by the hillside.

There are no designated scenic vista points in the area of the project site and therefore the project would not displace or obstruct views from a scenic vista. As noted above, the project is more than five miles from designated scenic highway routes and would not damage any scenic resources related to a scenic highway. The project would not impact trees, rock outcroppings or historic buildings considered to be significant scenic resources.

Mitigation: None required.

Impact A.4: Development of the project would introduce new sources of light and glare onto the project site and increase ambient light in the vicinity. (Less than Significant)

The project site is located in a developed area with roads, trails and land uses including residential areas, wastewater treatment facilities and an active refuse transfer station. Northwest of the project site, the Waterbird Regional Preserve, an approximately 198-acre wetland and associated upland area, is accessible to the public for recreation. Nearby sources of light and glare include the Shell Martinez and Tesoro Refineries (approximately 1 mile northwest and east of the project site respectively), which generally illuminate facilities in order for operations to continue throughout the night and vehicular traffic on I-680, west of the project site. On the project site, existing light levels are low given the undeveloped nature of the site itself and the minimal illumination from adjacent neighborhood street lighting and nearby land uses.

The project would develop a currently undeveloped site and the amount of light and glare produced on-site would increase and be visible from on- and off-site vantage points. Additional light and glare could contrast with the surrounding land uses, particularly with respect to views from the Waterbird Regional Preserve and would change nighttime views from some neighboring residential uses. “Spill light” (light that falls on offsite receptors, causing additional unwanted illumination) could be produced from interior and exterior home lighting, streets lights and headlights of vehicles traveling to and from the site.

The project would incrementally increase the amount of light generated on the site and in the vicinity. The project sponsor would be required to prepare and submit to the County an onsite lighting master plan for review and approval by the County. Development on the site and light generated by the project would be typical of similar residential development in the area and consistent with the character of the surrounding area.

In summary, while the project would generate an incremental increase in light generated on the site compared to existing conditions, the project would not create a substantial new source of light and glare that would adversely affect day or nighttime views in the area.

Mitigation: None required.

Impact A.5: The project, when combined with other foreseeable development in the vicinity, would result in a cumulative aesthetics impact related to scenic vistas and resources, or visual character and visual quality. (Less than Significant)

County staff identified approved, but not yet completed projects within the vicinity of the project site area. Each of the projects identified for consideration in the cumulative scenario would introduce new residential uses to the project vicinity. They include Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane) and Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard). Future new development within the area would be subject to development guidance contained within the *General Plan.*

The project would alter the visual character of, and change views of, the project site in substantially the same manner as the other approved but not yet completed projects considered in the cumulative scenario. Two such projects, Seal Island (24-lot residential subdivision on Central Avenue) and Palms Ten (10-lot residential subdivision on Palms Drive) abut the project site. Together, these projects would incrementally increase the urbanized and developed appearance of the project area. However, in the context of the project vicinity, the overall change would not be substantial, because the area is largely developed with a combination of residential, commercial and industrial uses. Therefore, in the context of existing and reasonably foreseeable future residential development in the immediate project vicinity, the cumulative aesthetic effects of the project would be less than significant.

Mitigation: None required.

References – Aesthetics

California Department of Transportation, *The California Scenic Highway System*, http://www.dot.ca.gov/hq/LandArch/scenic/cahisys.htm, accessed May 13, 2008.

Contra Costa County, *Contra Costa County General Plan (2005-2020)*, January 2005.

B. Air Quality and Climate Change

Introduction

This section addresses the impacts of the project on air quality and the exposure of people, especially sensitive individuals, to unhealthful pollutant concentrations, including the type and quantity of emissions that would be generated by project construction and operation. The analysis focuses on whether the project would exceed air quality significance thresholds recommended by the Bay Area Air Quality Management District and whether the project would conflict with California goals to reduce greenhouse gas emissions.

Setting

Regulatory Context for Air Quality

The U.S. Environmental Protection Agency ("U.S. EPA") is responsible for implementing the programs established under the federal Clean Air Act, such as establishing and reviewing the federal ambient air quality standards and judging the adequacy of *State Implementation Plans.* However, the U.S. EPA has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented. In California, the California Air Resources Board ("ARB") is responsible for establishing and reviewing the state ambient air quality standards, developing and managing the California State Implementation Plan, securing approval of this plan from the U.S. EPA and identifying toxic air contaminants ("TACs"). ARB also regulates certain mobile emissions sources in California, such as construction equipment, trucks and automobiles and oversees the activities of air quality management districts, which are organized at the county or regional level. Air quality management districts are primarily responsible for regulating stationary emissions sources at facilities within their geographic areas and for preparing the air quality plans that are required under the federal Clean Air Act and California Clean Air Act (see *Air Quality Plans*, below). The Bay Area Air Quality Management District ("BAAQMD") is the regional agency with regulatory authority over emissions sources in the Bay Area, which includes all of San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Marin and Napa counties, the southern half of Sonoma County and the southwestern half of Solano County.

Criteria Air Pollutants

As required by the federal Clean Air Act passed in 1970, the U.S. EPA has identified six criteria air pollutants that are pervasive in urban environments and for which state and national health-based ambient air quality standards have been established. The U.S. EPA calls these pollutants *criteria air pollutants* because the agency has regulated them by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. Ozone, carbon monoxide ("CO"), nitrogen dioxide, sulfur dioxide, particulate matter ("PM") and lead are the six criteria air pollutants.

Some criteria air pollutants are considered regional in nature, some are considered local and some have characteristics that are both regional and local. Air pollutants are also characterized as "primary" and "secondary" pollutants. Primary pollutants are those emitted directly into the atmosphere (such as carbon monoxide, sulfur dioxide, lead particulates and hydrogen sulfide). Secondary pollutants are those formed through chemical reactions in the atmosphere; these chemical reactions usually involve primary pollutants, normal constituents of the atmosphere and other secondary pollutants. Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases ("ROG") and nitrogen oxides ("NO_x"). ROG and NO_x are known as precursor compounds for ozone. Ozone is a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production.

Ambient CO concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area out to some distance from vehicular sources.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NO_x. ROG and NO_x are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer and fall, when long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone. Ground level ozone in conjunction with suspended particulate matter in the atmosphere leads to hazy conditions generally termed as "smog."

Carbon Monoxide ("CO")

Carbon monoxide, a colorless and odorless gas, is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicles. When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, less emissions from new vehicles and improvements in fuels. The clear success in

reducing CO levels is evident in the first paragraph of the executive summary of the California Air Resources Board *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas*, shown below:

> "The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (ARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard."

Nitrogen Dioxide

Nitrogen dioxide is an air quality concern because it acts as a respiratory irritant and is a precursor of ozone. Nitrogen dioxide is a major component of the group of gaseous nitrogen compounds commonly referred to as NO_x. Nitrogen oxides are produced by fuel combustion in motor vehicles, industrial stationary sources (such as industrial activities), ships, aircraft and rail transit. Typically, nitrogen oxides emitted from fuel combustion are in the form of nitric oxide and nitrogen dioxide. Nitric oxide is often converted to nitrogen dioxide when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Therefore, emissions of nitrogen dioxide from combustion sources are typically evaluated based on the amount of NO_x emitted from the source.

Sulfur Dioxide

Sulfur dioxide is a combustion product of sulfur or sulfur-containing fuels such as coal and oil, which are restricted in the Bay Area. Its health effects include breathing problems and potential permanent damage to lungs. Sulfur dioxide is an ingredient in acid rain (acid aerosols), which can damage trees, lakes and property. Acid aerosols can also reduce visibility.

Particulate Matter

PM10 and PM2.5 consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. A micron is one-millionth of a meter, or less than one-25,000th of an inch. For comparison, human hair is 50 microns or larger in diameter. PM10 and PM2.5 represent particulate matter of sizes that can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of aerosol-producing industrial and agricultural operations, fuel combustion and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles (PM2.5) of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed[1] gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility.

[1] "Adsorption" is a process that occurs when a gas or liquid accumulates on the surface of a solid and forms a film.

Particulate emissions in the project area are mainly from urban sources, dust suspended by vehicle traffic and secondary aerosols formed by reactions in the atmosphere. Particulate concentrations near residential sources generally are higher during the winter, when more fireplaces are in use and meteorological conditions prevent the dispersion of directly emitted contaminants.

Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease and coughing, bronchitis and respiratory illnesses in children. Mortality studies since the 1990's have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Dockery and Pope, 2006). ARB has estimated that achieving the ambient air quality standards for PM10 could reduce premature mortality rates by 6,500 cases per year (ARB, 2002), while achieving the annual ambient air quality standard for PM2.5 could reduce premature mortality by 9,300 per year (ARB, 2008d).

Lead

Leaded gasoline (currently phased out), paint (houses, cars), smelters (metal refineries) and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects for which children are at special risk. Some lead-containing chemicals cause cancer in animals.

Greenhouse Gas Pollutants

Gases that trap heat in the atmosphere are called greenhouse gases. The major concern is that increases in greenhouse gases are causing Global Climate Change. Global Climate Change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation and temperature. Although there is tremendous disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, most agree that there is a direct link between increased emission of so-called greenhouse gases and long term global temperature. What greenhouse gases have in common is that they allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation and warm up the air. The process is similar to the effect greenhouses have in raising the internal temperature, hence the name greenhouse gases. Both natural processes and human activities emit greenhouse gases.

The accumulation of greenhouse gases in the atmosphere regulates the earth's temperature; however, emissions from human activities such as electricity production and motor vehicles have elevated the concentration of greenhouse gases in the atmosphere. This accumulation of greenhouse gases has contributed to an increase in the temperature of the earth's atmosphere and contributed to Global Climate Change. The principal greenhouse gases are carbon dioxide (CO_2), methane, nitrous oxide, sulfur hexafluoride, perfluorocarbons, hydrofluorocarbons, and water vapor. Carbon dioxide is the reference gas for climate change because it gets the most attention

and is considered the most important greenhouse gas. To account for the warming potential of greenhouse gases, greenhouse gas emissions are often quantified and reported as CO_2 equivalents (CO_2e). Emission sources (i.e., individual projects) are generally reported in metric tons/year of CO_2e.

Ambient Air Quality Standards

Regulation of criteria air pollutants is achieved through both national and state ambient air quality standards and emissions limits for individual sources. Regulations implementing the federal Clean Air Act and its subsequent amendments established national ambient air quality standards (national standards) for the six criteria pollutants. California has adopted more stringent state ambient air quality standards for most of the criteria air pollutants. In addition, California has established state ambient air quality standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. Because of the unique meteorological problems in the state, there is considerable diversity between state and federal standards currently in effect in California, as shown in **Table 4.B-1**. The table also summarizes the principal sources for each pollutant.

The ambient air quality standards are intended to protect the public health and welfare and they incorporate an adequate margin of safety. They are designed to protect those segments of the public most susceptible to respiratory distress, known as sensitive receptors, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels somewhat above the ambient air quality standards before adverse health effects are observed.

There are no comparable air quality standards for greenhouse gases (GHGs) because concerns regarding GHGs do not focus on individual health effects, but rather on atmospheric accumulation and global environmental concern. See “Regulatory Context for GHG Emissions and Climate Change” below.

Attainment Status

Under amendments to the federal Clean Air Act, the U.S. EPA has classified air basins or portions thereof, as either “attainment” or “nonattainment” for each criteria air pollutant, based on whether or not the national standards have been achieved. The California Clean Air Act, which is patterned after the federal Clean Air Act, also requires areas to be designated as “attainment” or “nonattainment” for the state standards. Thus, areas in California have two sets of attainment / non-attainment designations: one set with respect to the national standards and one set with respect to the state standards.

As shown in Table 4.B-1, the Bay Area is currently designated “nonattainment” for state and national (1 hour and 8 hour) ozone standards and for the state PM10 and PM2.5 standards. The Bay Area is designated “attainment” or “unclassified” with respect to the other ambient air quality standards.

TABLE 4.B-1
AMBIENT AIR QUALITY STANDARDS AND BAY AREA ATTAINMENT STATUS

Pollutant	Averaging Time	State Standard	Bay Area Attainment Status for California Standard	Federal Primary Standard	Bay Area Attainment Status for Federal Standard	Major Pollutant Sources
Ozone	8 hour	0.07 ppm	Unclassified	0.08 ppm	Non-Attainment	Motor vehicles, Other mobile sources, combustion, industrial and commercial processes
	1 hour	0.09 ppm	Non-Attainment	---	---	
Carbon Monoxide	8 hour	9.0 ppm	Attainment	9 ppm	Attainment	Internal combustion engines, primarily gasoline-powered motor vehicles
	1 Hour	20 ppm	Attainment	35 ppm	Attainment	
Nitrogen Dioxide	Annual Average	--- ppm	---	0.03 ppm	Attainment	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships and railroads
	1 Hour	0.18 ppm	Attainment	---	---	
Sulfur Dioxide	Annual Average	---	---	0.03 ppm	Attainment	Fuel combustion, chemical plants, sulfur recovery plants and metal processing
	24 Hour	0.04 ppm	Attainment	0.14 ppm	Attainment	
	1 Hour	0.25 ppm	Attainment	---	---	
Particulate Matter (PM10)	Annual Arithmetic Mean	20 $\mu g/m^3$	Non-Attainment	---	---	Dust- and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions and natural activities (e.g., wind-raised dust and ocean sprays)
	24 hour	50 $\mu g/m^3$	Non-Attainment	150 $\mu g/m^3$	Unclassified	
Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 $\mu g/m^3$	Non-Attainment	15 $\mu g/m^3$	Attainment	Same as above
	24 hour	---	---	35 $\mu g/m^3$	Unclassified	
Lead	Calendar Quarter	---	---	1.5 $\mu g/m^3$	Attainment	Lead smelters, battery manufacturing & recycling facilities
	30 Day Average	1.5 $\mu g/m^3$	Attainment	---	---	

ppm = parts per million; and $\mu g/m^3$ = micrograms per cubic meter

SOURCE: BAAQMD, 2007, ARB, 2008c.

Air Quality Plans

The 1977 Clean Air Act Amendments require that regional planning and air pollution control agencies prepare a regional *Air Quality Plan* to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards specified in the Clean Air Act. The 1988 California Clean Air Act also requires development of air quality plans and strategies to meet state air quality standards in areas designated as non-attainment (with the exception of areas designated as non-attainment for the state PM standards). Maintenance plans are required for attainment areas that had previously been designated non-attainment in order to ensure continued attainment of the standards. Air quality plans developed to meet federal requirements are referred to as *State Implementation Plans*.

Bay Area plans are prepared by the BAAQMD with the cooperation of the Metropolitan Transportation Commission ("MTC") and the Association of Bay Area Governments ("ABAG"). Currently, there are three plans for the Bay Area. These are:

- The *Ozone Attainment Plan for the 1-Hour National Ozone Standard* (ABAG, 2001) developed to meet federal ozone air quality planning requirements
- The *Bay Area 2005 Ozone Strategy* (BAAQMD, 2006) developed to meet planning requirements related to the state ozone standard; and
- The *1996 Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas*, developed by the air districts with jurisdiction over the ten planning areas including the BAAQMD to ensure continued attainment of the federal carbon monoxide standard. In June 1998, the U.S. EPA approved this plan and designated the ten areas as attainment. The maintenance plan was revised most recently in 2004.

The Bay Area 2001 *Ozone Attainment Plan* was prepared as a proposed revision to the Bay Area part of California's plan to achieve the national ozone standard. The plan was prepared in response to U.S. EPA's partial approval and partial disapproval of the Bay Area's 1999 *Ozone Attainment Plan* and finding of failure to attain the national ambient air quality standard for ozone. The revised plan was adopted by the Boards of the co-lead agencies at a public meeting and approved by ARB in 2001. In July 2003, the U.S. EPA approved the plan. The U.S. EPA also made an interim final determination that the plan corrects deficiencies identified in the 1999 plan. Following three years of low ozone levels (2001, 2002 and 2003), in October 2003, U.S. EPA proposed a finding that the Bay Area had attained the national one-hour standard and that certain elements of the 2001 plan (attainment demonstration, contingency measures and reasonable further progress) were no longer required. In April 2004, U.S. EPA made final the finding that the Bay Area had attained the one-hour standard and approved the remaining applicable elements of the 2001 plan: emissions inventory; control measure commitments; motor vehicle emission budgets; reasonably available control measures; and commitments to further study measures.

The U.S. EPA recently transitioned from the national one-hour standard to a more health protective 8-hour standard. Defined as "concentration-based," the new national ozone standard is set at 85 parts per billion averaged over eight hours. The new national 8-hour standard is considered to be more health protective because it protects against health effects that occur with

longer exposure to lower ozone concentrations. In April 2004, U.S. EPA designated regions as attainment and non-attainment areas for the 8-hour standard. These designations took effect on June 15, 2004. U.S. EPA formally designated the Bay Area as a non-attainment area for the national 8-hour ozone standard and classified the region as "marginal" according to five classes of non-attainment areas for ozone, which range from marginal to extreme. Marginal non-attainment areas were charged with attaining the national 8-hour ozone standard by June 15, 2007. While certain elements of Phase 1 of the 8-hour implementation rule are still undergoing legal challenge, U.S. EPA signed Phase 2 of the 8-hour implementation rule on November 9, 2005. Although the Bay Area did not achieve attainment by the June 2007 deadline, it is not currently anticipated that marginal areas will be required to prepare attainment demonstrations for the 8-hour standard, though other planning elements may be required. The Bay Area plans to address all requirements of the national 8-hour standard in subsequent documents.

For state air quality planning purposes, the Bay Area is classified as a serious non-attainment area for ozone. The "serious" classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that the Bay Area update the *Clean Air Plan* ("CAP") every three years to reflect progress in meeting the air quality standards and to incorporate new information regarding the feasibility of control measures and new emission inventory data. The Bay Area's record of progress in implementing previous measures must also be reviewed. On January 4, 2006, the BAAQMD adopted the most recent revision to the CAP - the *Bay Area 2005 Ozone Strategy*. The control strategy for the *2005 Ozone Strategy* is to implement all feasible measures on an expeditious schedule in order to reduce emissions of ozone precursors and consequently reduce ozone levels in the Bay Area and reduce transport to downwind regions.

In April 2005, ARB established a new eight-hour average ozone standard of 0.070 ppm, which became effective on May 17, 2006. ARB is currently working on designations and implementation guidance for the new standard. The one-hour state standard has been retained. The San Francisco Bay Area has not attained the state eight-hour standards and will be taking action as necessary to address those standards once the planning requirements have been established.

Toxic Air Contaminants ("TACs")

The State Health and Safety Code defines TACs as air pollutants which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. TACs are less pervasive in the urban atmosphere than criteria air pollutants, but are linked to short-term (acute) or long-term (chronic and/or carcinogenic) adverse human health effects. There are hundreds of different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners) and motor vehicle exhaust. The current list of TACs includes approximately 200 compounds, including all of the toxics identified under federal law plus additional compounds, such as particulate emissions from diesel-fueled engines, which was added in 1998. Unlike regulations concerning criteria air pollutants, there are no ambient air quality standards for evaluating TACs. Instead, TAC emissions are evaluated based on the degree of health risk that

could result from exposure to these pollutants. According to the BAAQMD, diesel exhaust emissions pose the greatest degree of health risk to residents in the Bay Area.

Regulation of TACs is achieved through federal and state controls on individual sources.[2]

TACs have been regulated under federal air quality law since the 1977 federal Clean Air Act Amendments. The most recent federal Clean Air Act Amendments (1990) reflect a technology-based approach for reducing TACs. The first phase involves requiring facilities to install Maximum Achievable Control Technology (”MACT”). The MACT standards vary depending on the type of emitting source. U.S. EPA has established MACT standards for over 20 facilities or activities such as perchloroethylene dry cleaning and petroleum refineries. The second phase of control involves determining the residual health risk represented by air toxics emissions sources after implementation of MACT standards.

Two principal laws provide the foundation for state regulation of TACs from stationary sources. In 1983, the State Legislature adopted Assembly Bill 1807, which established a process for identifying TACs and provided the authority for developing retrofit air toxics control measures on a statewide basis. Air toxics from stationary sources in California are also regulated under Assembly Bill 2588, the Air Toxics “Hot Spots” Information and Assessment Act of 1987. Under Assembly Bill 2588, TAC emissions from individual facilities are quantified and prioritized by the regional air quality management district or county air pollution control district. High priority facilities are required to perform a health risk assessment and if specific thresholds are violated, they are required to communicate the results to the public in the form of notices and public meetings. Depending on the risk level, emitting facilities can be required to implement varying levels of risk reduction measures.

Locally, the BAAQMD administers the Bay Area’s Toxic Air Contaminant Control Program, which is intended to reduce public exposure to TACs from stationary sources in the Bay Area. BAAQMD is currently working to control TAC impacts at local “hot spots” and to reduce TAC background concentrations. The control strategy involves reviewing new stationary sources to ensure compliance with required emissions controls and limits, maintaining an inventory of existing stationary sources of TACs and developing new rules and regulations to reduce TAC emissions.

Regulation of TACs from mobile sources has traditionally been implemented through emissions standards for on-road motor vehicles (imposed on vehicle manufacturers) and through specifications for gasoline and diesel fuel sold in California (imposed on fuel refineries and retailers), rather than through land use decisions, air quality permits, or regulations addressing how motor vehicles are used by the general public.

[2] Federal environmental laws refer to “hazardous air pollutants,” while California environmental laws refer to “toxic air contaminants.” Both of these terms basically encompass the same constituent toxic compounds.

Local Standards for Air Quality

BAAQMD Rules and Regulations

The BAAQMD is the regional agency responsible for rulemaking, permitting and enforcement activities affecting stationary sources in the Bay Area. Specific rules and regulations adopted by the BAAQMD limit the emissions that can be generated by various uses and/or activities and identify specific pollution reduction measures that must be implemented in association with various uses and activities.

Contra Costa County General Plan

The 2005 Conservation Element of the *Contra Costa County General Plan 2005-2020* ("*General Plan*") (adopted January 2005) contains the following Air Resources policies that would relate to the project air quality analysis.

> *Policy 8-101*: A safe, convenient and effective bicycle and trail system shall be created and maintained to encourage increased bicycle use and walking as an alternative to driving.
>
> *Policy 8-102*: A safe, convenient and effective pedestrian system shall be created and maintained to encourage increased bicycle use and walking as an alternative to driving.
>
> *Policy 8-103*: When there is a finding that a proposed project may significantly affect air quality, appropriate mitigation measures shall be imposed.
>
> *Policy 8-104*: Proposed projects shall be reviewed for their potential to generate hazardous air pollutants.
>
> *Policy 8-105*: Land uses which are sensitive to air pollution shall be separated from sources of air pollution.
>
> *Policy 8-106*: New housing in infill and peripheral areas which are adjacent to existing residential areas shall be encouraged.

Additionally, the Conservation Element of the *General Plan* contains the following Implementation Measure that would apply to the proposed project:

> *Implementation Measure 8-dm:* Review major development applications to ensure that buffer zones are provided between major air pollution sources (freeways, industry etc.) or sources of hazardous pollutants and sensitive receptors such as hospitals, convalescent homes and residences.

Regulatory Context for GHG Emissions and Climate Change

State Standards

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gas would be progressively reduced, as follows:

- By 2010, reduce greenhouse gas emissions to 2000 levels;
- By 2020, reduce greenhouse gas emissions to 1990 levels; and
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or "AB 32"), which requires ARB to design and implement emission limits, regulations and other measures, such that statewide greenhouse gas emissions are reduced to 1990 levels by 2020.

In April 2007, ARB published *Proposed Early Actions to Mitigate Climate Change in California* (ARB, 2007b). This publication did not discuss GHG emissions in the context of CEQA analysis or individual land use decisions, instead identifying specific measures that could be implemented primarily through the state's existing regulatory framework. Analysis of GHG emissions in CEQA documents and in context of local General Plans was not considered in this report.

On December 11, 2008, ARB adopted its *Climate Change Scoping Plan* (Scoping Plan), which functions as a roadmap of ARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations (ARB, 2008e). The Scoping Plan contains the main strategies California will implement to reduce CO_2e emissions by 174 million metric tons (MMT), or approximately 30 percent, from the state's projected 2020 emissions level of 596 MMT of CO_2e under a business-as-usual scenario. The Scoping Plan also breaks down the amount of GHG emissions reductions ARB recommends for each emissions sector of the state's GHG inventory. While ARB has identified a GHG reduction target of 15 percent for local governments themselves, it has not yet determined what amount of GHG emissions reductions it recommends from local government land use decisions. However, the Scoping Plan does state that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. ARB further acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The measures approved by ARB will be developed over the next two years and be in place by 2012.

The Scoping Plan also includes recommended measures that were developed to reduce greenhouse gas emissions from key sources and activities while improving public health, promoting a cleaner environment, preserving our natural resources, and ensuring that the impacts of the reductions are equitable and do not disproportionately impact low-income and minority communities. The measures, categorized by economic sector (transportation, electricity, commercial and residential buildings, industry, recycling and waste, high-global-warming potential, agriculture, and forestry) based on ARB's statewide GHG inventory, are intended to put the state on a path to meet the long-term 2050 goal of reducing California's greenhouse gas emissions to 80 percent below 1990 levels. Some of these measures are set forth in **Table 4.B-2**.

TABLE 4.B-2
GHG REDUCTION MEASURES IN ARB SCOPING PLAN[1]

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO_2e)
Transportation		
T-1	Pavley I and II – Light Duty Vehicle Greenhouse Gas Standards	31.7
T-2	Low Carbon Fuel Standard (Discrete Early Action)	15
T-3[2]	Regional Transportation-Related Greenhouse Gas Targets	5
T-4	Vehicle Efficiency Measures	4.5
T-5	Ship Electrification at Ports (Discrete Early Action)	0.2
T-6	Goods Movement Efficiency Measures. • Ship Electrification at Ports • System-Wide Efficiency Improvements	3.5
T-7	Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)	0.93
T-8	Medium- and Heavy-Duty Vehicle Hybridization	0.5
T-9	High Speed Rail	1
Electricity and Natural Gas		
E-1	Energy Efficiency (32,000 GWh of Reduced Demand) • Increased Utility Energy Efficiency Programs • More Stringent Building & Appliance Standards Additional Efficiency and Conservation Programs	15.2
E-2	Increase Combined Heat and Power Use by 30,000 GWh (Net reductions include avoided transmission line loss)	6.7
E-3	Renewables Portfolio Standard (33% by 2020)	21.3
E-4	Million Solar Roofs (including California Solar Initiative, New Solar Homes Partnership and solar programs of publicly owned utilities) • Target of 3000 MW Total Installation by 2020	2.1
CR-1	Energy Efficiency (800 Million Therms Reduced Consumptions) • Utility Energy Efficiency Programs • Building and Appliance Standards • Additional Efficiency and Conservation Programs	4.3
CR-2	Solar Water Heating (AB 1470 goal)	0.1
Green Buildings		
GB-1	Green Buildings	26
Recycling and Waste		
RW-1	Landfill Methane Control (Discrete Early Action)	1
RW-2	Additional Reductions in Landfill Methane	TBD†
RW-3	High Recycling/Zero Waste	TBD†
Water		
W-1	Water Use Efficiency	1.4†
W-2	Water Recycling	0.3†
W-3	Water System Energy Efficiency	2.0†
W-4	Reuse Urban Runoff	0.2†
W-5	Increase Renewable Energy Production	0.9†
W-6	Public Goods Charge (Water)	TBD†

1 Table excludes GHG reduction measures for Agriculture, Forestry, and Industry (including high-global warming potential gases).
2 This is not the SB 375 regional target. CARB will establish regional targets for each MPO region following the input of the regional targets advisory committee and a consultation process with MPO's and other stakeholders per SB 375.
† GHG emission reduction estimates are not included in calculating the total reductions needed to meet the 2020 target.

SOURCE: ARB, 2008e.

Moreover, in September 2008, Governor Schwarzenegger signed into law California Senate Bill 375 (SB 375). The legislation aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) that will prescribe land use allocation in the MPO's regional transportation plan. ARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects will not be eligible for funding programmed after January 1, 2012.

ARB is also developing mandatory greenhouse gas reporting regulations pursuant to requirements of AB 32. The regulations will require reporting for facilities that make up the bulk of the stationary source emissions in California. The regulations identify major facilities such as those that generate more than 25,000 metric tons/year of CO_2e. Cement plants, oil refineries, electric generating facilities/providers, co-generation facilities and hydrogen plants and other stationary combustion sources that emit more than 25,000 metric tons/year of CO_2e, make up 94 percent of the point source CO_2 emissions in California (ARB, 2007c). Approximately 65 percent of all GHG emissions in California can be attributed to stationary sources with the remaining 35 percent resulting from mobile source emissions (ARB, 2007e).

Governor's Office of Planning and Research (OPR)

On June 19, 2008, OPR published a technical advisory on CEQA and Climate Change. The advisory provides OPR's perspective on the emerging role of CEQA in addressing climate change and greenhouse gas emissions, while recognizing that approaches and methodologies for calculating greenhouse gas emissions and addressing environmental impacts through CEQA review are rapidly evolving. The advisory recognizes that OPR will develop, and the Resources Agency will adopt, amendments to the CEQA Guidelines pursuant to SB 97. In the interim, the technical advisory "offers informal guidance regarding the steps lead agencies should take to address climate change in their CEQA documents" (OPR, 2008).

The technical advisory points out that neither CEQA nor the CEQA Guidelines prescribe thresholds of significance or particular methodologies for performing an impact analysis. "This is left to lead agency judgment and discretion, based upon factual data and guidance from regulatory agencies and other sources where available and applicable" (OPR, 2008). OPR recommends that "the global nature of climate change warrants investigation of a statewide threshold of significance for GHG emissions" (OPR, 2008). Until such a standard is established, OPR advises that each lead agency should develop its own approach to performing an analysis for projects that generate greenhouse gas emissions (OPR, 2008).

Agencies should then assess whether the emissions are "cumulatively considerable" even though a project's greenhouse gas emissions may be individually limited. OPR states: "Although climate

change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment" (OPR, 2008). Individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice (OPR, 2008).

Finally, if the lead agency determines emissions are a cumulatively considerable contribution to a significant cumulative impact, the lead agency must investigate and implement ways to mitigate the emissions (OPR, 2008). OPR states: "Mitigation measures will vary with the type of project being contemplated, but may include alternative project designs or locations that conserve energy and water, measures that reduce vehicle miles traveled (VMT) by fossil-fueled vehicles, measures that contribute to established regional or programmatic mitigation strategies, and measures that sequester carbon to offset the emissions from the project" (OPR, 2008). OPR concludes that "A lead agency is not responsible for wholly eliminating all GHG emissions from a project; the CEQA standard is to mitigate to a level that is "less than significant" (OPR, 2008). The technical advisory includes a list of mitigation measures that can be applied on a project-by-project basis.

OPR Proposed Amendments to the CEQA Guidelines

On April 13, 2009, OPR submitted to the Secretary for Natural Resources its proposed amendments to the state CEQA Guidelines for GHG emissions, as required by Public Resources Code section 21083.05 (Senate Bill 97) (OPR, 2009). These proposed CEQA Guideline amendments would provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The Natural Resources Agency began a formal rulemaking in July 2009, and on October 23, 2009, the Agency reissued the proposed Guidelines amendments in revised form. The Natural Resources Agency will accept additional public comment prior to certifying and adopting the amendments, as required by Senate Bill 97.

The proposed amendments suggest relatively modest changes to various portions of the existing CEQA Guidelines. Modifications address those issues where analysis of GHG emissions may differ in some respects from more traditional CEQA analysis.

Proposed amendments include a new section (15064.4) to assist lead agencies in determining the significance of the GHG impacts. This section urges lead agencies to quantify, where possible, the GHG emissions of proposed projects. In addition to quantification, this section recommends consideration of several other qualitative factors that may be used in determination of significance including: (1) the extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the GHG emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The proposed amendments include a new subdivision 15064.7(c) to clarify that in developing thresholds of significance, a lead agency may appropriately review thresholds developed by other public agencies, such as a local air district or ARB, or suggested by other experts, such as the

California Air Pollution Control Officers Association, so long as any threshold chosen is supported by substantial evidence.

In addition, the proposed amendments add a new set of environmental checklist questions (VII. Greenhouse Gas Emissions) to the CEQA Guidelines Appendix G. The new set includes the following two questions:

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG?

California Air Pollution Control Officers Association (CAPCOA)

In January 2008, the California Air Pollution Control Officers Association (CAPCOA) issued a "white paper" on evaluating and addressing GHGs under CEQA (CAPCOA, 2008). This resource guide was prepared to support local governments as they develop their programs and policies around climate change issues. The paper is not a guidance document. It is not intended to dictate or direct how any agency chooses to address GHG emissions. Rather, it is intended to provide a common platform of information about key elements of CEQA as they pertain to GHG, including an analysis of different approaches to setting significance thresholds.

The paper notes that for a variety of reasons local agencies may decide not to have a CEQA threshold. Local agencies may also decide to assess projects on a case-by-case basis when the projects come forward. The paper also discusses a range of GHG emission thresholds that could be used. The range of thresholds discussed includes a GHG threshold of zero and several non-zero thresholds. Non-zero thresholds include percentage reductions for new projects that would allow the state to meet its goals for GHG emissions reductions by 2020 and perhaps 2050. These would be determined by a comparison of new emissions versus business as usual emissions and the reductions required would be approximately 30 percent to achieve 2020 goals and 90 percent (effectively immediately) to achieve the more aggressive 2050 goals. These goals could be varied to apply differently to new project, by economic sector, or by region in the state.

Other non-zero thresholds are discussed in the paper include:

- 900 metric tons/year CO_2e (a market capture approach);
- 10,000 metric tons/year CO_2e (potential CARB mandatory reporting level with Cap and Trade);
- 25,000 metric tons/year CO_2e (the CARB mandatory reporting level for the statewide emissions inventory);
- 40,000 to 50,000 metric tons/year CO_2e (regulated emissions inventory capture – using percentages equivalent to those used in air districts for criteria air pollutants),

- Projects of statewide importance (9,000 metric tons/year CO_2e for residential, 13,000 metric tons/year CO_2e for office project, and 41,000 metric tons/year CO_2e for retail projects), and
- Unit-based thresholds and efficiency-based thresholds that were not quantified in the report.

ARB Draft GHG Significance Thresholds

On October 24, 2008, ARB released its *Preliminary Draft Staff Proposal on Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act* for review and public comment (ARB, 2008f). The Proposal identifies benchmarks or standards that assist lead agencies in the significance determination for industrial, residential, and commercial projects. Staff intends to make its final recommendations on thresholds in early 2009, consistent with OPR's timeline for issuing draft CEQA guidelines addressing GHG emissions and to provide much needed guidance to lead agencies in the near term. The *Proposal* currently focuses on two sectors for which local agencies are typically the CEQA lead agency: industrial projects; and residential and commercial projects. Future proposals will focus on transportation projects, large dairies and power plant projects.

For industrial projects, ARB recommends that projects below the industrial screening level (7,000 metric tons/year CO_2e not including the traffic) can be found to be less than significant. For residential and commercial projects, ARB staff's objective is to develop a threshold on performance standards that will substantially reduce the GHG emissions from new projects and streamline the permitting of carbon-efficient projects. Performance standards will address the five major emission sub-sources for the sector: energy use, transportation, water use, waste, and construction. Projects may alternatively incorporate mitigation equivalent to these performance standards, such as measures from green building rating systems.

Bay Area Air Quality Management District (BAAQMD)

In November 2009, BAAQMD published the *CEQA Guidelines Update: Proposed Thresholds of Significance* (BAAQMD, 2009), which included various updated and revised thresholds and mitigation measures for project and plan-level impact analyses. These proposed thresholds, and other documents prepared in support of the proposal, are part of a planned update of BAAQMD's CEQA *Guidelines*, which were last updated in 1999. The October 2009 report proposes a significant GHG emission threshold of 1,100 MT/year of CO_2 equivalents or 4.6 MT/year per "service population" (residents plus employees) for land use projects, unless a project is consistent with a "qualified climate action plan," in which case the project can be found to have a less-than-significant impact with respect to GHG emissions and climate change. The BAAQMD Board of Directors is scheduled to consider adoption of its revised CEQA Guidelines in December 2009. However, the existing BAAQMD CEQA *Guidelines* contain no thresholds of significance for GHGs.

Physical Setting

Climate and Meteorology

The project site is located in Contra Costa County, which lies within the San Francisco Bay Area Air Basin (”Bay Area”). The Bay Area Air Basin encompasses the nine-county region including all of Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, San Francisco, Marin and Napa Counties and the southern portions of Solano and Sonoma Counties. The climate of the Bay Area is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the West Coast of North America. High-pressure systems are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface and resulting in the formation of subsidence inversions. In winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the region. During summer and fall, emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone and secondary particulates, such as sulfates and nitrates.

Specifically, the project site is located within the Carquinez Straight climatological subregion of the Bay Area Air Basin (BAAQMD, 1999). This subregion is bound by Rodeo in the southwest, Vallejo in the northwest, Fairfield in the northeast and Brentwood in the southeast. Prevailing winds in this subregion are from the west with some eastward flow during the summer and fall months. Temperatures in the subregion range from the maximum summer averages in the 90s and minimum winter averages in the low 50s (BAAQMD, 1999).

Wind speeds recorded between 2001 through 2005 at the Shell East meteorological station, about 1 mile northwest of the project site, show annual average wind speeds of 6.35 mph. Pollution potential is relatively low for those areas near the bay due to good ventilation. However, this subregion contains a variety of industrial pollution sources as well as major freeways which generate pollution locally.

Existing Air Quality

Criteria Air Pollutants

The BAAQMD operates a regional monitoring network that measures the ambient concentrations of the six criteria air pollutants. Existing and probable future levels of air quality in the project vicinity can generally be inferred from ambient air quality measurements conducted by the BAAQMD at its nearby monitoring stations. The Jones Street station in Martinez is nearest to the project site (located approximately 3 miles to the northwest); however this station only monitors sulfur dioxide, which is typically not a pollutant of regional concern in the Bay Area. The 2956 Treat Boulevard Station in Concord is the second closest station located approximately 6 miles south of the project site. This station monitors nitrogen dioxide, Ozone, PM10 and PM2.5. **Table 4.B-3** shows a five-year summary of monitoring data for criteria pollutants from the 2956 Treat Boulevard station. The table also compares these measured concentrations with state and federal ambient air quality standards.

TABLE 4.B-3
AIR QUALITY DATA SUMMARY (2002–2006) FOR THE PROJECT AREA

Pollutant	Standard[b]	Monitoring Data by Year				
		2002	2003	2004	2005	2006
Ozone[a]						
Highest 1 Hour Average (ppm)[c]		0.103	0.101	0.097	0.098	0.117
Days over State Standard	0.09	5	5	1	1	8
Days over National Standard	0.12	0	0	0	0	0
Highest 8 Hour Average (ppm)[c]		0.089	0.085	0.083	0.080	0.092
Days over National Standard	0.08	3	1	0	0	4
Carbon Monoxide[a]						
Highest 1 Hour Average (ppm)[c]		3.5	3.2	2.7	2.2	1.7
Days over State Standard	20	0	0	0	0	0
Days over National Standard	35	0	0	0	0	0
Highest 8 Hour Average (ppm)[c]		2.3	2.0	2.0	1.5	1.3
Days over State/National Standard	9.0	0	0	0	0	0
Nitrogen Dioxide[a]						
Highest 1 Hour Average (ppm)[c]		0.063	0.062	0.065	0.055	0.047
Days over State Standard	0.25	0	0	0	0	0
Particulate Matter (PM10)[a]						
Highest 24 Hour Average ($\mu g/m^3$)[c]		65.8	34.0	50.7	42.2	83.6
Measured Days over State Standard[d]	50	3	0	1	0	3
Measured Days over National Standard[d]	150	0	0	0	0	0
Particulate Matter (PM2.5)[a]						
Highest 24-Hour Average ($\mu g/m^3$)[c]		NA	NA	NA	40.9	16.0
Measured Days over National Standard[e]	65	NA	NA	NA	0	0

[a] Data are from BAAQMD's 2956 Treat Boulevard station in Concord.
[b] Generally, state standards are not to be exceeded and federal standards are not to be exceeded more than once per year.
[c] ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
[d] PM10 is not measured every day of the year. It is measured once every 6 days. The data shown refers to the actual number of days.
[e] PM2.5 is measured every day between the months of October and March and once every six days during the rest of the year. The data shown refers to the actual number of days.

NA = Not Available.

SOURCE: ARB, 2008a.

Table 4.B-4 shows trends in regional exceedances of the federal and state ozone standards. Because of the number of exceedances, ozone is the pollutant of greatest concern in the Bay Area. Bay Area counties experience most ozone exceedances during the period from April through October.

Industrial facilities such as chemical plants and refineries contribute significantly to air pollution in the Carquinez Strait Region. Motor vehicle transportation, including automobiles, trucks, transit buses and other modes of transportation, is also a major contributor to regional air pollution.

The principal sources of ozone precursors ROG and NO_x in the Bay Area include on-road motor vehicles (approximately 39 percent for ROG and 52 percent for NO_x), other mobile sources (approximately 17 percent for ROG and 34 percent for NO_x), solvent evaporation (approximately 20 percent for ROG), fuel combustion (approximately 9 percent NO_x) and oil and gas production

TABLE 4.B-4
SUMMARY OF OZONE DATA FOR THE SAN FRANCISCO BAY AREA AIR BASIN, 1996 – 2006

	Number of Days Standard Exceeded[a]			Ozone Concentrations in ppm[b]	
Year	State 1-hr	Federal 1-hr	Federal 8-hr	Maximum 1-hr	Maximum 8-hr
2006	18	1	12	0.13	0.105
2005	9	0	1	0.12	0.090
2004	7	0	0	0.11	0.084
2003	19	1	7	0.13	0.101
2002	16	2	7	0.16	0.106
2001	15	1	7	0.13	0.100
2000	12	3	9	0.15	0.144
1999	20	3	4	0.16	0.122
1998	29	8	16	0.15	0.111
1997	8	0	0	0.11	0.084
1996	34	8	14	0.14	0.112

[a] This table summarizes the data from all of the monitoring stations within the Bay Area.
[b] ppm = parts per million.

SOURCE: ARB, 2008b.

(approximately 9 percent for ROG). Bay Area emissions of the ozone precursors ROG and NO_x are expected to decrease by approximately 24 and 36 percent, respectively, between 2005 and 2020 (ARB, 2007a) largely as a result of the State's on-road motor vehicle emission control program. The Bay Area has a significant motor vehicle population and these reductions are projected as vehicles meeting more stringent emission standards enter the fleet and all vehicles use cleaner burning gasoline and diesel fuel or alternative fuels. This includes the use of improved evaporative emission control systems, computerized fuel injection, engine management systems to meet increasingly stringent California emission standards, cleaner gasoline and the Smog Check program. ROG and NO_x emissions from other mobile sources and stationary sources are also projected to decline as more stringent emission standards and control technologies are adopted and implemented.

Direct emissions of PM10 have increased slightly in the Bay Area since 1975 and the trend is projected to continue. This increase is due to growth in emissions from area-wide sources, primarily fugitive dust sources. Emissions of directly emitted PM2.5 from diesel motor vehicles have been decreasing since 1990 (due to adoption of more stringent emission standards for vehicle manufacturers) even though population and vehicle miles traveled are growing. As shown in Table 4.B-3, PM10 concentrations at the Treat Boulevard monitoring station occasionally exceed the 24-hour average state standard.

The standards for nitrogen dioxide, sulfur dioxide and lead are being met in the Bay Area and the latest pollutant trends suggest that these standards will not be exceeded in the foreseeable future (ABAG, 2001).

Toxic Air Contaminants

Both BAAQMD and ARB have monitoring networks in the Bay Area that measure ambient concentrations of certain TACs that are associated with important health-related effects and are present in appreciable concentrations in the Bay Area. The BAAQMD uses this information to determine risks for a particular area. Generally, ambient concentrations of TACs are similar through the urbanized areas of the Bay Area. Of the pollutants for which monitoring data are available, benzene and 1,3- butadiene (which are emitted primarily from motor vehicles) account for over one-half of the average calculated cancer risk (BAAQMD, 2004). Benzene levels have declined dramatically since 1996 with the advent of Phase 2 reformulated gasoline. The use of reformulated gasoline also appears to have led to significant decreases in 1,3-butadiene. Due largely to these observed reductions in ambient benzene and 1,3-butadiene levels, the calculated network average cancer risk has been significantly reduced in recent years. Based on 2005 ambient monitoring data, ARB reported a calculated lifetime cancer risk from measured concentrations of TACs, excluding diesel particulate matter, to be 93 in one million averaged over all Bay Area locations (ARB, 2007d). Because diesel particulate matter cannot be directly monitored in the ambient air, the BAAQMD uses ARB's estimates of the population-weighted average ambient diesel particulate concentration for the Bay Area to derive an average cancer risk from diesel particulate matter exposure at about 480 in one million, as of 2000 (ARB, 2007d). The risk from diesel particulate matter has been reduced from 750 in one million in 1990 and 570 in one million in 1995 (ARB, 2007d).

Table 4.B-5 provides a summary of TAC Data for the San Francisco Bay Area Air Basin.

While the information in Table 4.B-5 applies to the Bay Area as a whole, specific locations within the region may be subject to higher or lower concentrations and health risks due to location specific factors. For instance, proximity to oil refineries and higher volume roadways, such as occurs at the project site, can be expected to increase risks of exposure to TACs. Site specific conditions are discussed under **Impact B.4**.

Sensitive Land Uses

Some persons are considered more sensitive than others to air pollutants. The reasons for heightened sensitivity may include health problems, proximity to the emissions source and duration of exposure to air pollutants. Land uses such as schools, hospitals and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old and the infirm are more susceptible to respiratory infections and other air-quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people are often at home for extended periods. Recreational land uses are moderately sensitive to air pollution, because vigorous exercise associated with recreation places a high demand on the human respiratory system.

TABLE 4.B-5
SAN FRANCISCO BAY AREA AIR BASIN TOXIC AIR CONTAMINANTS – ANNUAL AVERAGE CONCENTRATIONS AND HEALTH RISKS

TAC	Annual Average Concentration[a] and Health Risk[b]	2001	2002	2003	2004	2005
Acetaldehyde	Annual Avg	0.73	0.63	0.74	0.74	0.71
	Health Risk	4	3	4	4	3
Benzene	Annual Avg	0.43	0.45	0.44	0.37	0.31
	Health Risk	39	42	41	34	29
1,3-Butadiene	Annual Avg	0.13	0.14	0.1	0.09	0.08
	Health Risk	50	51	37	34	28
Carbon Tetrachloride	Annual Avg	0.09	0.09	0.1	--	--
	Health Risk	23	24	25	--	--
Chromium (Hexavalent)	Annual Avg	--	0.07	0.1	0.09	0.08
	Health Risk	--	11	14	14	12
para-Dichlorobenzene	Annual Avg	0.14	0.15	0.15	0.17	0.15
	Health Risk	9	10	10	11	10
Formaldehyde	Annual Avg	2.32	2.57	2.22	1.71	1.32
	Health Risk	17	19	16	13	10
Methylene Chloride	Annual Avg	0.27	0.22	0.22	0.14	0.13
	Health Risk	<1	<1	<1	<1	<1
Perchloroethylene	Annual Avg	0.06	0.05	0.04	0.035	0.029
	Health Risk	2	2	2	1	1
Diesel Particulate Matter[c]	Annual Avg	1.6	1.6	1.6	1.6	1.6
	Health Risk	480	480	480	480	480

[a] Concentrations for Chromium (Hexavalent) are expressed as ng/m^3 and concentrations for diesel particulate matter are expressed as μg/m^3. Concentrations for all other TACs are expressed as ppb.
[b] Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. There may be significant compounds other than the ones presented here for which monitoring and/or health risk information are not available.
[c] Diesel particulate matter concentration estimates are based on receptor modeling techniques and estimates are available only for selected years. Most recent data available is for the year 2000 and has been used for all other years presented.

SOURCE: ARB, 2007d.

Existing sensitive receptors in the project area include single family residences to the northwest of the project site between Palms Drive and Arthur Road. There are also single family residences located to the northwest of the project site to the west of I-680.

Impacts and Mitigation Measures

Significance Criteria and Analysis Methodology

The significance of potential impacts to air quality was determined based on CEQA *Guidelines* and other relevant considerations. The guidelines identify certain thresholds to assist in determining whether an impact reaches a level that produces adverse effects. Using these thresholds and other relevant considerations, implementation of the project would be considered to have significant air quality impacts if it were to:

- Conflict with or obstruct implementation of the applicable air quality plan(s);
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people, or
- Conflict with the state goal of reducing greenhouse gas emissions in California to 1990 levels by 2020, as set forth by the timetable established in AB 32, California Global Warming Solutions Act of 2006. A project could conflict with the state reduction goal if it would:
  - Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
  - Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHG.

BAAQMD CEQA Guidelines

BAAQMD has published the *BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans,* which are a set of recommendations that provide specific guidance on evaluating projects relative to the above general criteria (BAAQMD, 1999). For temporary construction-phase impacts, BAAQMD recommends a qualitative approach that focuses on the dust control measures that would be implemented. If appropriate mitigation measures are implemented to control PM10 emissions, then the impact from construction would be less than significant. For evaluating operational-phase emissions, BAAQMD recommends that local agencies use criteria of 80 pounds per day or 15 tons per year to identify significant increases in emissions of ROG, NO_X and PM10 from individual development projects; an exceedance of the criteria would be considered a significant impact.

For Toxic Air Contaminants (“TACs”), any project with the potential to expose sensitive receptors (including residential areas) or the general public to substantial levels of toxic air contaminants would be deemed to have a significant impact. This applies to receptors locating near existing sources of toxic air contaminants, as well as sources of toxic air contaminants locating near existing receptors.

Proposed development projects that have the potential to expose the public to toxic air contaminants in excess of the following thresholds would be considered to have a significant air quality impact. These thresholds are based on the BAAQMD’s Risk Management Policy. Thresholds of Significance for Toxic Air Contaminants:

1. Probability of contracting cancer for the Maximally Exposed Individual ("MEI")[3] exceeds 10 in one million; or

2. Ground-level concentrations of non-carcinogenic toxic air contaminants ("TACs") would result in a Hazard Index greater than 1 for the MEI.

For CO, an increase of 550 pounds per day would be considered significant if it leads to or contributes to CO concentrations exceeding the State Ambient Air Quality Standard of 9 ppm averaged over 8 hours or 20 ppm for 1 hour (i.e., if it creates a "hot spot").

Generally, if a project results in an increase in ROG, NOx, or PM10 of more than 80 pounds per day, then it would also be considered to contribute considerably to a significant cumulative effect. For projects that would not lead to a significant increase of ROG, NOx, or PM10 emissions, the cumulative effect is evaluated based on a determination of the consistency of the project with the regional clean air plan.

For odors, BAAQMD recommends that potential impacts be evaluated if a potential source of objectionable odors is proposed at a location near existing sensitive receptors or if sensitive receptors are proposed to be located near an existing source of objectionable odors. **Table 4.B-6** shows screening distances between potential sources of odors and sensitive receptors. If a project would result in a sensitive receptor and odor source located closer to one another than the screening level distances, a more detailed analysis must be performed. For projects that involve a new receptor being located near an existing source of odors, it is suggested that the District's inventory of odor complaints for the nearest odor emitting facilities be reviewed for the previous three years. Odor impacts should be considered significant if there has been more than one confirmed complaint per year averaged over a three year period, or three unconfirmed complaints per year averaged over a three year period.

TABLE 4.B-6
PROJECT SCREENING TRIGGER LEVELS FOR POTENTIAL ODOR SOURCES

Type of Operation	Project Screening Distance
Wastewater Treatment Plant	1 mile
Sanitary Landfill	1 mile
Transfer Facility	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g. auto body shops)	1 mile
Rendering Plant	1 mile
Coffee Roaster	1 mile

SOURCE: BAAQMD, 1999.

[3] MEI is the Maximally Exposed Individual, which represents the worst-case risk estimate based on a theoretical person continuously exposed for 70 years at the point of highest compound concentration in air.

The BAAQMD further recommends that these complaints be mapped in relation to the odor source to establish a general boundary of existing impacts. However, recent confidentiality requirements prohibit the district from disclosing the specific address or census block number of the complainant. In the absence of this data, BAAQMD staff recommends that this evaluation consider local meteorological conditions, particularly the percentage of time the winds would be directed toward the project site from each nearby source of odor (Tholen, 2009).

GHG Emissions and Climate Change

At this time no statewide government has adopted anything beyond a case-by-case significance criterion for evaluating a project's contribution to climate change. The OPR has asked ARB to "recommend a method for setting thresholds of significance to encourage consistency and uniformity in the CEQA analysis of GHG emissions" throughout the state because OPR has recognized that "the global nature of climate change warrants investigation of a statewide threshold for GHG emissions" (OPR, 2008). ARB began the public process of addressing significance thresholds in October 2008, but many decisions need to be made before the criteria are final.

The informal guidelines in OPR's technical advisory and ARB's proposed thresholds provide a general basis for determining a proposed project's contribution of greenhouse gas emissions and the project's contribution to global climate change. In the absence of adopted statewide thresholds, OPR recommends the following approach for analyzing greenhouse gas emissions:

1. Identify and quantify the project's greenhouse gas emissions;
2. Assess the significance of the impact on climate change; and
3. If the impact is found to be significant, identify alternatives and/ or mitigation measures that would reduce the impact to less-than-significant levels.

OPR's technical advisory states that "the most common GHG that results from human activity is carbon dioxide, followed by methane and nitrous oxide." As discussed above, at this time there are no adopted statewide guidelines for greenhouse gas emission impacts, but this is being addressed through the provisions of Senate Bill 97 ("SB 97"). Proposed amendments and additions to the CEQA Guidelines were forwarded by OPR in April 2009; and the State Resources Agency has until January 1, 2010 to certify and adopt the regulations. In the interim local agencies must analyze the impact of GHGs. For this project, the project would be considered to have a significant impact if the project would be in conflict with the AB 32 State goals for reducing greenhouse gas emissions. It is important that the state has taken these measures, because no project individually could have a major impact (either positively or negatively) on the global concentration of GHG.

Methodology

Air Quality

Project-related air quality impacts fall into two categories: impacts due to construction and impacts due to project operation. First, during project construction, the project would affect local particulate concentrations primarily due to fugitive dust sources. Over the long-term, the project would result

in an increase in emissions primarily due to increased motor vehicle trips. Onsite area sources (such as natural gas boilers for water and space heating and emissions from landscaping and use of consumer products) would result in lesser quantities of pollutant emissions.

For construction-related phase impacts, BAAQMD does not require quantification of construction emissions, but recommends that significance be based on a consideration of the control measures to be implemented (BAAQMD, 1999). Construction impacts are discussed qualitatively and the applicable BAAQMD-recommended dust abatement measures are identified.

Operational phase emissions were estimated using the Urban Emissions model, URBEMIS2007[4]. Construction of the project is expected to begin in 2010 and last between one and three years depending on project phasing. Since emissions rates are expected to go down over time, daily emissions rates were evaluated using the conservative assumption that buildout would be achieved in 2010. The daily emissions rates were then compared to BAAQMD thresholds to determine significance.

The 1999 BAAQMD CEQA *Guidelines* recommend analyzing localized carbon monoxide concentrations for projects that will result in emissions of more than 550 pounds per day of CO or for projects that will result in intersections operating at a level of service ("LOS") of D, E or F. This recommendation is clearly a leftover caution related to higher CO levels from the 1980's. The results of these analyses have shown that even with large projects and many lanes of traffic, the "hotspot" analyses actually measure only minor increases in CO levels that remain well below the standards. In numerous analyses conducted by Environmental Science Associates ("ESA") since 2000, ESA found no predicted "CO hotspots" anywhere in central or northern California that would lead to violations of the state or federal standards. All the modeling efforts have found that CO background concentrations continue to decline (where air districts still monitor CO) and the average emissions from vehicles continue to decline. The end result has been that the predicted levels "CO hotspot" locations do not violate state or federal standards. Furthermore more, none of the intersections analyzed in Section 4L, *Transportation and Traffic*, are expected to operate at a LOS of D, E or F as a result of project traffic. Therefore, this EIR will not analyze localized CO concentrations.

To determine if the proposed project would expose a sensitive receptor to a cancer risk of greater than 10 in one million or to a hazard index greater than or equal to one, a health risk assessment (HRA) was conducted. The HRA included a discussion of background risk from nearby facilities including the Shell Martinez Refinery and Tesoro Refinery, as well as modeled concentrations of diesel particulate matter from nearby mobile sources (including Interstate 680 and the Burlington Northern Santa Fe Railroad). Additional information on the modeling methodology is discussed in Appendix C, *Health Risk Assessment*.

Lastly, cumulative impacts of the project were evaluated based on the BAAQMD CEQA *Guidelines* as discussed under the significance thresholds.

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4 URBEMIS 2007 is an air pollutants emissions model that can estimate construction and/or operational emissions from land use projects in California.

GHG Emissions and Climate Change

As noted previously, the State of California has not provided guidance as to quantitative significance thresholds for assessing the impact of greenhouse gas emissions on climate change and global warming concerns, and the CEQA *Guidelines* have yet to be formally amended to address this issue. Accordingly, this EIR uses three considerations to determine whether the project would be in conflict with the state goals for reducing GHG emissions. These considerations were developed from a review of recent publications and actions from ARB that address how the state plans to achieve the goals of reducing GHG. The considerations are shown below and include a review of:

A. Potential conflicts with the GHG reduction strategies in the ARB Scoping Plan (Table 4.B-2);

B. The relative size of the project in comparison to the estimated GHG emissions for the Bay Area and to the state goal for greenhouse gas reduction of 174 million metric tons per year of CO_2e by 2020, as well as in comparison to the size of major facilities that are required to report GHG emissions (25,000 metric tons per year of CO_2e);

C. The basic parameters of the project to determine whether its design is inherently energy efficient; and

D. Any potential conflicts with applicable Contra County plans, policies, or regulations adopted for the purpose of reducing the emissions of GHGs.

Impacts

Impact B.1: Activities associated with site preparation and construction throughout development of the project would generate suspended and inhalable particulate matter. (Significant)

Construction-related fugitive dust emissions would cause adverse effects on the local air quality. The project site is currently undeveloped; therefore no demolition activities would be necessary during construction of the project. Project construction activities would involve and new construction across approximately 78 acres. The project entails construction of approximately 163 single-family detached homes and two open space parcels of approximately 11.6 and 15 acres. The project would grade a hilltop of approximately 10 acres which would remain as undeveloped land. The construction impacts identified herein would apply to construction activities throughout development of the project, although the effects would be intermittent between each phase.

Project-related construction activities would include site preparation, earthmoving and general construction. Site preparation includes activities such as general land clearing and grubbing. Earthmoving activities include cut-and-fill operations, trenching, soil compaction and grading. General construction includes adding improvements such as roadway surfaces, structures and facilities. These activities would result in dust emissions (including PM10 and PM2.5) primarily

from "fugitive" sources (i.e., emissions released through means other than through a stack or tailpipe) such as soil disturbance.

Construction-related fugitive dust emissions at the project site would vary from day to day, depending on the level and type of activity, silt content of the soil and the weather. Without mitigation, construction activities would result in significant quantities of dust and as a result, local visibility and PM10 and PM2.5 concentrations would be adversely affected, temporarily and intermittently, during the construction period. In addition, the fugitive dust generated by construction would include not only PM10, but also larger particles, which would fall out of the atmosphere, potentially as far as several hundred feet from the site and could result in nuisance impacts. The BAAQMD's approach to analyses of fugitive dust emissions from construction is to emphasize implementation of effective and comprehensive dust control measures rather than detailed quantification of emissions. The BAAQMD considers any project's construction-related impacts to be less than significant if the required dust-control measures are implemented. Without these measures, the impact is generally considered to be significant, particularly if sensitive land uses are located in the project vicinity. There are a number of residences located along the northern border of the project site that would be impacted by fugitive dust generated by construction activities.

The project would be subject to the following dust control mitigation measure. Implementation of the measures would reduce impacts from fugitive dust to on- and off-site receptors to a less-than-significant level.

> **Mitigation Measure B-1:** During construction, the project applicant shall require the construction contractor to implement the following measures required as part of Bay Area Air Quality Management District's ("BAAQMD") basic and enhanced dust control procedures required for construction sites. These include:
>
> *Basic Controls that Apply to All Construction Sites*
>
> a) Water all active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site.
>
> b) Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
>
> c) Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
>
> d) Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.
>
> e) Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent paved roads.
>
> *Enhanced Controls that Apply to Sites Greater than 4 Acres*
>
> f) All "Basic" controls listed above, plus

g) Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).

h) Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).

i) Limit traffic speeds on unpaved roads to 15 miles per hour.

j) Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

k) Replant vegetation in disturbed areas as quickly as feasible.

Significance after Mitigation: Less than Significant.

Impact B.2: Activities associated with site preparation and construction throughout development of the project would generate emissions of criteria pollutants, including equipment exhaust emissions. (Less than Significant)

Construction activities would result in the emission of ROG, NO_x, CO, SO_x and PM10 from equipment exhaust, construction-related vehicular activity and construction worker automobile trips. Emission levels for construction activities would vary depending on the number and type of equipment use, duration of use, operation schedules (the time and frequency) and the number of construction workers traveling to the worksite by motorized vehicle. Criteria pollutant emissions of ROG and NO_x from these emissions sources would incrementally add to the regional atmospheric loading of ozone precursors during project construction. BAAQMD CEQA *Guidelines* recognize that construction equipment emits ozone precursors, but indicate that such emissions are included in the emission inventory that is the basis for regional air quality plans. Therefore, construction emissions of ROG and NO_X would not be expected to impede attainment or maintenance of ozone standards in the Bay Area (BAAQMD, 1999). The impact of construction equipment exhaust emissions would therefore be less than significant.

Mitigation: None required.

Impact B.3: The project would result in increased emissions of criteria pollutants and their precursors from vehicular traffic to and from the project site; however, the emission increases from the project would not exceed Bay Area Air Quality Management District significance criteria. (Less than Significant)

The project would result in an increase in criteria air pollutant emissions from a variety of emissions sources, including on-site area sources (e.g., natural gas combustion for space and water heating, landscape maintenance, use of consumer products such as hairsprays, deodorants, cleaning products, etc.) and mobile on-road sources (automobile and truck trips). Exhaust emissions from passenger vehicle travel associated with the project were calculated by using the

URBEMIS2007 program, which uses EMFAC2007 (ARB's vehicle emissions model for cars and trucks) and a standard mix of passenger vehicles in 2010. As stated previously, the earliest that buildout of the project would be reached is 2010 and so 2010 has been used as the analysis year for project operations. URBEMIS2007 also calculates area source emissions based on the size of the project.

The project would result in approximately 1,560 new vehicle trips per day. **Table 4.B-7** summarizes project-generated mobile and area emissions of criteria pollutants for the project in the year 2010 (buildout) and compares them with significance thresholds. As indicated in Table 4.B-7, project-related emissions of ROG, CO, NO_x and PM10 would not exceed the significance threshold emission levels. Therefore, impacts from increases in these emissions would be less than significant.

TABLE 4.B-7
ESTIMATED DAILY EMISSIONS FOR THE PROJECT

	Project Emissions,[a] 2010 (pounds/day)			
Air Pollutant	**Area Source Emissions**	**Vehicular Emissions**	**Total**	**Significance Threshold (pounds/day)**
NO_x	4	23	27	80
PM10	13	23	36	80
ROG	34	15	48	80
CO	86	172	257	550[b]

[a] Emission factors were generated by the Air Board's URBEMIS2007 model for Contra Costa County and assume a default vehicle mix. All daily estimates are for wintertime conditions (most conservative).
[b] Projects for which mobile source CO emissions exceed 550 pounds per day do not necessarily have a significant air quality impact, but are required to estimate localized CO concentrations.

NOTE: No values exceed applicable standards. The addition of the subtotals may not equal the total due to rounding.

SOURCE: ESA, 2008

Mitigation: None required.

Impact B.4: The project would result in exposure of persons to substantial levels of Toxic Air Contaminants ("TACs") such that the probability of contracting cancer for the Maximally Exposed Individual exceeds 10 in one million. (Significant)

The primary source of TAC emissions from project operations would be Diesel Particulate Matter ("DPM") emissions from the delivery trucks that would be visiting the site. Diesel trucks on the nearby I-680 and other sources would also emit DPM that could affect the project site, although not directly related to project operations. These emissions are discussed below. Based on the traffic analysis for this project, daily traffic increases due to the project would be approximately 1,560 total vehicle trips by 2010. To determine the proportion of new trips that would be diesel

operated, the general vehicle fleet percentages contained in URBEMIS2007 were used. URBEMIS2007 estimates that in 2010, when the project is expected to be fully operational, there would be approximately 40 daily trips by diesel powered vehicles. Likewise, the percentage of vehicles and trucks within each weight class and the portion of these trucks that are fueled by diesel were also obtained from URBEMIS2007. Diesel exhaust emissions rates for all diesel trucks were obtained from EMFAC2007, assuming an average vehicle speed of 30 mph. Total emissions were calculated for a total distance of 1 mile, which includes 0.5 miles as the truck approaches the site and 0.5 miles as the truck leaves the site. The annual average DPM emissions for these truck-travel distances were estimated to be approximately 1.67 pounds in the year 2025.

Annual average DPM concentration impacts from diesel vehicles operating near the site were calculated using the SCREEN3 model and the incremental cancer risks were estimated from these concentrations. The estimated incremental DPM concentrations near the site ranged from 0.0005 to 0.00225 microgram per cubic meter. The incremental cancer risks from exposure to these concentrations were estimated to be 0.15 to 0.675 in one million. Since these impacts are substantially less than the BAAQMD significance threshold of 10 in one million, the impacts would be less than significant.

The *Air Quality and Land Use Handbook* prepared by ARB recommends that sensitive uses not be located within 500 feet of a heavily traveled freeway (ARB, 2005). Since the project would be located within 500 feet of I-680, a Health Risk Assessment ("HRA") was conducted to quantify the risks to the project from I-680 vehicle emissions (see Appendix C). Potential sources of TACs identified in this HRA include mobile sources that emit DPM and nearby stationary facilities that emit TACs. Mobile sources include heavy duty trucks traveling on I-680, trains traveling along the railroad tracks located directly south of the project site, heavy duty off-road equipment operating at the Contra Costa County Transfer and Recovery Station ("CCTRS") and heavy duty on-road trucks making deliveries to the CCTRS. Stationary facilities identified in the HRA include the Shell Martinez Refinery, the Tesoro Refinery, the Acme Landfill and the Central Contra Costa Sanitary District ("CCCSD") facility.

Non-cancer adverse health risks are measured against a Hazard Index, which is the ratio of the predicted exposure concentration to a threshold level referred to as the reference exposure level ("REL"). The annual average DPM concentration modeled at the project site was estimated to be $0.085\mu g/m^3$ (see Appendix C). The chronic REL for DPM as established by OEHHA is $5.0\mu g/m^3$. Therefore, DPM emissions from mobile sources would result in a chronic hazard index of 0.017 ($0.085\mu g/m^3$ / $5.0\mu g/m^3$). There is no acute REL for exposure to DPM. Non-cancer adverse health risks would be less than significant.

As discussed in detail in the HRA (see Appendix C) the mobile sources identified above would result in an incremental cancer risk of 27 in one million from exposure to DPM at the Maximally Exposed Individual ("MEI")[5]. The Shell Refinery would add an estimated incremental cancer risk of 4.5 in one million to receptors at the project site, of which 70 percent can be attributed to particulate matter emissions. It was estimated that the Tesoro Refinery would expose receptors at

[5] See footnote 3, above.

the project site to an incremental cancer risk of 3.3 in one million, 70 percent of which could be attributed to particulate matter emissions. The Acme Landfill and CCCSD facility were estimated to expose receptors at the project site to risks of 0.9 and 1.3 in one million respectively. Overall, the cumulative cancer risk at the maximum exposed individual was estimated to be 37 in one million, of which 32.8 in one million would be attributed to particulate matter emissions while the remaining 4.2 in one million would be attributed to gaseous TACs. This exceeds the BAAQMD recommended significance threshold of 10 in one million and thus represents a significant impact.

As noted in the setting, the lifetime cancer risk for the Bay Area as a whole, excluding the risk from DPM, is 93 in one million. The regional cancer risk from DPM alone is 480 in one million. Thus, both non-DPM TACs and DPM alone could expose receptors at any Bay Area location to a cancer risk well in excess of the significance criteria of 10 in one million. However, because the project site is exposed to particular sources, including freeway traffic and truck traffic at the CCTRS and two nearby refineries, the 37 in one million cancer risk calculated for the project site is largely in excess of the regional "background" risk of nearly 573 in one million.

Site-specific risk reductions can be obtained by ensuring that occupants of individual residential units are provided with the opportunity to obtain protection from site-specific risk of TAC exposure. The following mitigation measure would substantially reduce exposure to TACs, and therefore risk, during the time occupants were indoors (with windows closed), and is considered the best feasible means of offering protection from the identified health risk.

> **Mitigation Measure B.4:** The applicant shall install air filters at the residences that have a Minimum Efficiency Reporting Value ("MERV") rating of 14 or higher based on ASHRAE Standard 52.2 Test Procedures. Filters with a MERV 14 rating have a control efficiency of 85 percent or more for airborne particulate matter. Filters shall be installed in conjunction with a forced air system or other ventilation system capable of ensuring sufficient pressure to facilitate whole building filtration. Filters must be maintained according to manufacturers' recommendations to be effective.

Significance with Mitigation: Mitigation Measure B-4 would reduce the site specific cancer risk from PM by 85 percent resulting in an incremental cancer risk of 4.9 in one million from PM alone (85 percent reduction from 32.8 in one million). When added to the cancer risk of 4.2 in one million from gaseous TACs, which would not be reduced by filtration, the resulting incremental cumulative cancer risk to residents at the project site would be 9.1 in one million. This impact would therefore be less than significant with mitigation.

Impact B.5: The project would not conflict with implementation of state goals for reducing greenhouse gas emissions and thereby would not have an adverse effect on the State's ability to meet its goals under AB 32 with regard to Global Climate Change. (Less than Significant)

The California Energy Commission (CEC) estimated that in 2004 California produced 500 million gross metric tons (about 550 million U.S. tons) of carbon dioxide-equivalent GHG emissions.[6] The CEC found that transportation is the source of 38 percent of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23 percent and industrial sources at 13 percent (CEC, 2006).

In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the greatest source of the Bay Area's GHG emissions, accounting for approximately 40.6 percent of the Bay Area's 102.6 million metric tons of GHG emissions in 2007. Industrial and commercial sources were the second largest contributors of GHG emissions with about 34 percent of total emissions. The other contributors in descending order include electricity and co-generation (14.8 percent), residential fuel usage (6.6 percent), off-road equipment (2.8 percent), and agriculture and farming (1.1 percent) (BAAQMD, 2008).

Greenhouse gas impacts are considered to be exclusively cumulative impacts; there are no non-cumulative greenhouse gas emission impacts from a climate change perspective (CAPCOA, 2008).Four types of analysis are used to determining whether the project could be in conflict with the State goals for reducing greenhouse gas emissions. The analyses are as follows:

A. Any potential conflicts with the GHG reduction strategies in the ARB Scoping Plan.

B. The relative size of the project. The project's greenhouse gas emissions will be compared to the size of major facilities that will be required to report greenhouse gas emissions (25,000 metric tons/year of CO_2e)[7] to the state; and the project size will also be compared to the estimated GHG emissions for the Bay Area and to estimated state goal for greenhouse gas reduction of 174 million metric tons of CO_2e per year by 2020. In reaching its goals the ARB will focus upon the largest emitters of greenhouse gas emissions.

C. The basic parameters of the project to determine whether its design is inherently energy efficient.

D. Any potential conflicts with applicable Contra County plans, policies, or regulations adopted for the purpose of reducing the emissions of GHGs.

6 Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

7 As noted above the 25,000 metric ton annual limit identifies the large stationary point sources in California that make up approximately 94 percent of the stationary emissions. If the project's total emissions are below this limit, its total emissions are equivalent in size to the smaller projects in California that as a group only make up 6 percent of all stationary emissions. It is assumed that the activities of these smaller projects generally would not conflict with State's ability to reach AB 32 overall goals.

With regard to Item A, the project does not pose any explicit conflict with the applicable list of ARB GHG reduction strategies (see Table 4.B-2). As can be seen in the table, many of the measures—such as implementation of increased fuel efficiency for vehicles (the "Pavley" standards), increased efficiency in utility operations, and development of more renewable energy sources—require statewide action by government, industry, or both. Some of the measures are at least partially applicable to development projects, such as increasing energy efficiency in new construction, installation of solar panels on individual building roofs, and a "green building" strategy—although, arguably, some of these measures could require government action, such as strengthening of building codes, to realize meaningful reductions in GHG emissions. At the same time, the project as proposed does not include any measures specifically aimed at reducing GHG emissions below what would be anticipated from a typical residential development project. Such measures could include dwellings that exceed Title 24 (state building code) energy efficiency requirements, installation of solar panels and/or "cool roofs," reduced parking, use of drought-resistant landscaping and plantings that reduce interior solar heating, and perhaps even inclusion of a small retail store to reduce "errand" trips.

With regard to Item B, project-related construction greenhouse gas emissions would be approximately 528 metric tons/year of CO_2e and project operations would generate approximately 2,946 metric tons/year of CO_2e (including emissions from vehicle trips, space heating and indirect emissions from the use of electricity). The project would not be classified as a major source of greenhouse gas emissions (operational emissions would be about 11.8 percent of the lower reporting limit, which is 25,000 metric tons/year of CO_2e).

In comparison to Bay Area GHG emissions, the project-related increase in annual operational emissions (2,946 metric tons/year of CO_2e) represent approximately 0.003 percent of total Bay Area GHGs emitted in 2007[8]. When compared to the overall State reduction goal of approximately 174 million metric tons/year of CO_2e, the maximum greenhouse gas emissions for the project (2,946 metric tons/year of CO_2e or 0.002 percent of the State goal) are quite small and therefore the project would not generate sufficient emissions of GHGs to contribute considerably to the cumulative effects of GHG emissions such that it would impair the state's ability to implement AB 32.

With regard to Item C, the project would be required to comply with all applicable local, state and federal regulations associated with the generation of GHG emissions and energy conservation. In particular, construction of the project would also be required to meet California Energy Efficiency Standards for Residential Buildings, helping to reduce future energy demand as well as reduce the project's GHG emissions. However, the project design has both positive and negative features related to energy efficiency. The project would not include any elements of mixed-use development and the project would not be considered transit oriented development. Both of these factors would increase the amount of transportation energy needed for residents to conveniently meet their daily needs, compared to a project of comparable scale and intensity that were to

[8] The Bay Area Air Quality Management District reported regional Bay Area GHGs emissions in 2007 at approximately 102.6 million CO_2e tons. Bay Area 2007 GHG emissions are used as the baseline for determining whether a project's contributions are significant as these are the most recent emissions inventory for the bay area.

include a mix of complementary uses and frequent, readily accessible transit service. However, the positive jobs balance in the Martinez Sphere of Influence ("SOI") would provide opportunities for reduced commute distances for the project residences. Locating projects in areas with a positive jobs balance is an inherently energy efficiency practice.

In regards to Item D, the County has developed a *Contra Costa County Municipal Climate Action Plan* (Contra Costa County, 2008), which aims to reduce GHGs from municipal sources. Measures included in this *Climate Action Plan* specifically apply to County municipal sources. The project would not conflict with these GHG reduction measures.

The review of Items A, B, C, and D indicates that the project would hold only a minor potential to conflict with implementation of the State goals in AB 32 because of the relatively minor amount of CO_2e emissions. Overall this impact would be less than significant.

Mitigation: None required.

Impact B.6: The project would locate sensitive receptors near existing sources of objectionable odors. (Less than Significant)

Existing sources of objectionable odors located near the project site include: a fully operational refuse transfer station located approximately 0.3 miles north of the project site; the Shell Martinez Refinery and the Tesoro Refinery located approximately 1 mile northwest and east of the project site respectively; and the Central Contra Costa Sanitary District's wastewater treatment plant and household hazardous waste collection facilities located approximately 1 mile southeast of the project site.

Odor complaint records from January 2005 through January 2008 were obtained from the BAAQMD for each of the facilities identified above. According to these records, the Tesoro Refinery received 6 confirmed complaints and 103 unconfirmed complaints during this time frame. The Shell Martinez Refinery received 41 complaints, 5 of which were confirmed. The Acme Landfill received a total of 6 complaints and the Central Contra Costa Sanitary District received a total of 3 complaints. Cumulatively these facilities received 148 unconfirmed complaints and 11 confirmed complaints over a three year period.

This is well above the odor significance threshold of one confirmed complaint per year or three unconfirmed complaints per year averaged over a three year period. However, in the absence of location information from the complainants, the geographic relationship of the receptor to the source is not known. In this case, it is possible that all or none of the complaints were lodged from areas close to the project site. Therefore, under direction from BAAQMD, historical meteorological data on wind direction was used to essentially map these complaints in relation to the odor source and adjust the number of complaints assumed to occur in proximity to the project site. While other local wind conditions, such as wind speed and terrain, could also influence the potential for odor impacts at the project site, these factors were already at play when the various

complaints were registered and are presumed to be included in the results. Meteorological data is available from the Shell Martinez Refinery, the Tesoro Refinery and the Central Contra Costa Sanitary District site. Measurements taken at the Shell Martinez Refinery between 2001 and 2005 show that the wind blows from the northwest towards the project site approximately 10 percent of the time and north from the Transfer Station to the project site approximately 2.5 percent of the time. Measurements taken at the Sanitary District site over the same time period show that the wind blows from the southeast towards the project site approximately 8 percent of the time. Wind measurements taken at the Tesoro Refinery from 2001 to 2005 show that the wind blows from the northeast towards the project site approximately 6 percent of the time. During these wind events it is more likely that receptors at the project site would be exposed to objectionable odors. This historical meteorological data was used to adjust the odor complaint records by multiplying the number of complaints by the percentage of time the wind is anticipated to be directed from odor emitting facilities toward the project site (see **Table 4.B-8** below).

TABLE 4.B-8
RAW AND ADJUSTED ODOR COMPLAINTS

Odor Emitting Facility	Confirmed Complaints 1/05 - 1/08	Average Annual Confirmed Complaints	Unconfirmed Complaints 1/05 - 1/08	Average Annual Unconfirmed Complaints	Percent Time Wind Directed toward Project Site	Adjusted Average Annual Confirmed Complaints	Adjusted Average Annual Unconfirmed Complaints
Tesoro Refinery	6	2	103	34.3	6	0.1	2.1
Shell Martinez Refinery	5	1.7	36	12	10	0.2	1.3
Acme Landfill	0	0	6	2	2.5	0	0.1
Central Contra Costa Sanitary District	0	0	3	1	8	0	0.1
	11	**3.7**	**148**	**49.3**		**0.3**	**3.6**[a]

[a] Numbers may not add due to rounding.

SOURCE: ESA

Considering the local meteorological influences and the combined number of odor complaints from the four nearby odor emitting facilities, the potential for the project to expose sensitive receptors to objectionable odors exists. However, it is not anticipated that any one of the surrounding odor emitting facilities would result in objectionable odors in excess of the BAAQMD recommended thresholds.

Mitigation: None required.

Cumulative Impacts

Impact B.7: The project is fundamentally consistent with the growth assumptions of the Bay Area *Clean Air Plan*. (Less than Significant)

According to the BAAQMD CEQA *Guidelines*, any proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact. Table 4.B-7 shows that the operational emissions of ROG, NO_x and PM10 due to project-related traffic estimates based on the ARB model URBEMIS2007 would be less than the significance criteria of 80 pounds per day. For projects that individually have a less-than-significant impact on regional air quality, the BAAQMD Guidelines state that the cumulative impact should be determined based on the project's consistency with the applicable local *Clean Air Plan*, in this case, the *2005 Bay Area Ozone Strategy*. For a project to be consistent with the *2005 Bay Area Ozone Strategy*, the project must not conflict with or obstruct its implementation and should be consistent with its underlying growth assumptions, which are the ABAG *Projections 2003* forecasts. Between 2000 and 2025, ABAG *Projections 2003* forecast population growth of approximately 18 percent (254,800 to 300,000) for the region including Concord, Martinez, Pleasant Hill and Walnut Creek. Since growth rates anticipated for the area of the project would not exceed ABAG's projected growth rate for the region, the project would not conflict with the underlying growth assumptions of the *2005 Bay Area Ozone Strategy*.

The BAAQMD CEQA *Guidelines* state that if a project requires a General Plan Amendment – as the project does – a fundamental conflict would occur if the project generates more vehicle miles traveled than what would occur from the project site under the zoning and land use designations that exist without the proposed General Plan Amendment. Therefore, when considering the approximately 78.6 acres of the site where a General Plan Amendment is required to allow the residential land uses envisioned for the project, the project would result in fewer total daily vehicle trips (thus, vehicle miles traveled) than would development under the existing *General Plan* land use classification (*Heavy Industry*) and zoning ("H-I" Heavy Industrial). The project proposes 163 single family residential units which would result in approximately 1,560 total daily vehicle trips.[9] Under the existing zoning and land use classification, a theoretic development of 2,293,946 square feet of heavy industrial use, which could occur in the existing "H-I" Heavy Industrial Zone and the *Heavy Industry* land use classification, is assumed. Such a development would generate approximately 3,341 total daily vehicle trips.[10,11]

In summary, the project would not fundamentally conflict with the *2005 Bay Area Ozone Strategy*, the currently adopted *Clean Air Plan* and would not result in a cumulative air quality impact. The impact would be less than significant.

Mitigation: None required.

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9 Assuming a trip generator rate of 9.57 trips per dwelling unit for single family housing.
10 Assuming a trip generator rate of 1.5 trips per 1,000 square feet of land use for Heavy Industrial.
11 Scenario of 2,293,946 square feet of heavy industrial square feet is estimated based on the parcel site (78.6 acres) and the maximum floor area ratio (FAR) of 0.67 for heavy industrial as designated in the Contra Costa County General Plan Land Use Element (Contra Costa County, 2005b).

References – Air Quality and Climate Change

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C. Biological Resources

Introduction

This section identifies the existing biological resources at the site and surrounding area (study area) of the proposed Bayview Residential Project ("project"), identifies the federal, state, and local regulations pertaining to biological resources within the region, and describes project-related impacts to those biological resources and mitigation measures to reduce significant impacts. Information used in the preparation of this section was obtained from regional biological studies, reports from the California Natural Diversity Database (CDFG, 2008), California Native Plant Society Electronic Inventory (CNPS, 2008), and U.S. Fish and Wildlife species list (USFWS, 2008), reconnaissance-level field surveys, and other biological literature.

Vegetation types and wildlife habitats were identified using both records and field observations. To gather information and verify existing data on vegetative communities, wildlife habitats, and habitat use on and surrounding the site, reconnaissance-level floristic surveys were conducted by Wood Biological Consulting on May 1, 2007 and September 28th, 2007 and by Environmental Science Associates (ESA) on March 26, 2008.

The project would develop 163 single-family detached homes and internal roadways on 42 acres. The project would preserve three undeveloped parcels on the project site: an approximately 10-acre parcel on the western portion of the property, an approximately 15-acre parcel on the southeastern perimeter of the project site, and a open space and "bio-retention area" of approximately 11.6 acres on the eastern most side of the property. The open space would preserve the existing meadow, marsh lands and 2.4 acres of open-water pond habitat areas. Open space amenities would include a wildlife viewing platform and a paved path along the open space's western edge.

Setting

Regional Setting

The project is located in the San Francisco Bay Area, which is characterized by a Mediterranean climate with moderately warm, dry summers and mild, wet winters, and biologically within the Bay Area-Delta Bioregion (as defined by the State's Natural Communities Conservation Program). This Bioregion comprises a variety of natural communities, which range from salt marshes to chaparral to oak woodland. The high diversity of vegetation found in Contra Costa County is a result of topographic and micro-climate diversity and, in combination with the rapid pace of development in the region, has resulted in a high degree of endangerment for local flora and fauna.

The project is situated in gently rolling hills south of the tidal brackish marshes that border the southern shores of Suisun Bay. To the northwest, the hills continue along the southern shore of the Carquinez Strait. A segment of the Contra Costa Canal lies along the western and

southwestern border between the site and I-680, and the alluvial flats along the northern end of Pacheco Creek skirt the project site along the eastern and southeastern boundaries. The project site encompasses approximately 78 acres situated just northeast of the highway and the Pacheco Boulevard exit, in unincorporated Contra Costa County. Adjacent properties to the west and northwest support a mixture of residential, commercial, and light industrial uses. Lands to the northeast, east and south are largely undeveloped properties zoned and partly used for heavy industrial purposes. The site itself consists of nearly level to gently sloping land on the east side, rising sharply to the summit of a prominent hill on the west known as Vine Hill. Elevations range from approximately 4 feet to 283 feet above mean sea level ("msl").

Four soil units are mapped as occurring within the project site (USDA, 1977). These are Omni silty clay, Lodo clay loam, 9 to 30 percent slopes, Lodo clay loam 30 to 50 percent slopes, Altamont clay, 15 to 30 percent slopes, and Dibble silty clay loam, 30 to 50 percent slopes.

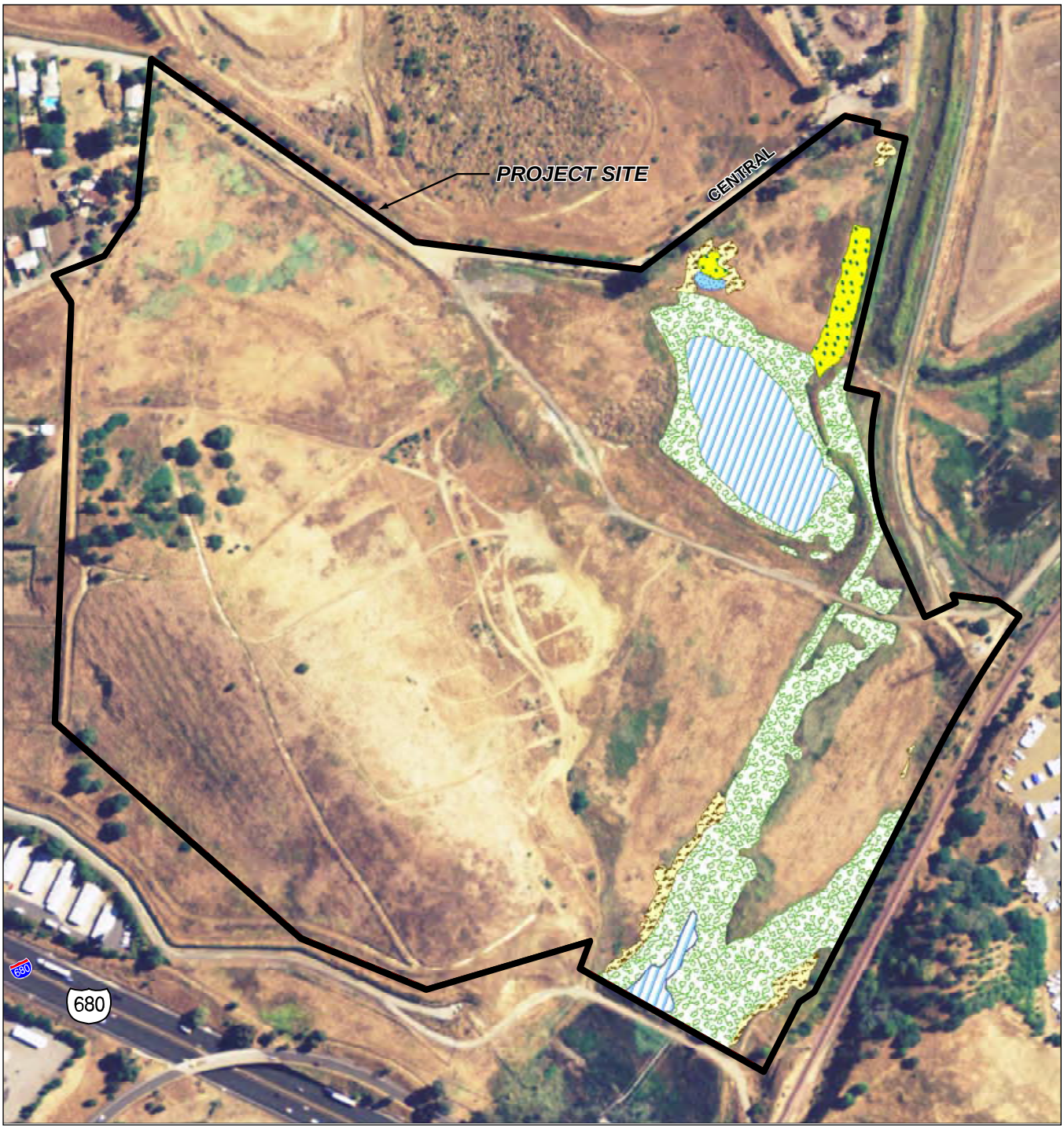
Project Setting –Vegetation Communities and Wildlife Habitats

The project site supports both terrestrial and aquatic habitat elements. The predominant vegetation associations are ruderal vegetation, non-native grassland, alkali meadow, valley oak woodland, emergent freshwater marsh and non-tidal northern coastal salt marsh, and creeping wildrye grassland. The following descriptions are derived largely from a floristic analysis prepared by Wood Biological Consulting (WBC, 2007a), which is incorporated by reference. The classifications are displayed in **Figure 4.C-1**.

Ruderal Vegetation

Ruderal (disturbed and weedy) habitats are most prevalent in areas subject to frequent and often severe vegetation and soil disturbances including disked or fallow fields, construction sites, levees, vehicle parking lots, and railroad or other public utility rights of way. This habitat type occurs throughout the southern portion of the project site near the railroad tracks. A larger portion in the eastern project area where the housing is to be constructed is highly disturbed by cattle grazing, which limits the growth of native vegetation. Where vegetated, these sites are dominated by opportunistic, weedy non-native plant species such as perennial pepperweed (*Lepidium latifolium*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), wild mustard (*Brassica nigra*), mayweed (*Anthemis cotula*), and bristly ox-tongue (*Picris echioides*). Ruderal habitats provide limited foraging or nesting habitat for disturbance tolerant and non-native birds and small mammals (*e.g.*, English sparrow [*Passer domesticus*], European starling [*Sternus vulgaris*], house finch [*Carpodacus mexicanus*], Norway rat [*Rattus norvegicus*], and house mouse [*Mus musculus*]). Within the project area, the less disturbed ruderal areas may be occupied by California ground squirrels (*Spermophilus beechyi*) and other rodents. Although these areas generally lack suitable habitat for native wildlife, under appropriate conditions they may support sensitive wildlife species such as burrowing owl (*Athene cunicularia*)[1].

[1] As used in this document, the terms "sensitive" or "special status" species are those with legal protection and those meeting CEQA *Guidelines* Section 15380 criteria, i.e., species which, even if not on one of the official lists, may become endangered in the foreseeable future.



Project Site
Alkali Meadow
Freshwater Marsh
Non-tidal Northern Coastal Salt Marsh
Open Water
Seasonal Wetland

0 300
Feet

SOURCE: Wood Biological Consulting

Bayview Residential Project . 208078

Figure 4.C-1
Aerial Photo Plan View of Project Vicinity

Non-Native Annual Grassland

Non-native annual grassland is generally found in open areas in valleys and foothills throughout coastal and interior California (Holland, 1986). It typically occurs on soils consisting of fine-textured loams or clays that are somewhat poorly drained. This vegetation type is dominated by non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands, scrub and woodland as a result of human disturbance. Scattered native wildflowers and grasses, representing remnants of the original vegetation may also be common.

Within the study area, non-native annual grassland is present on a majority of the western portion of the site and on the hillsides. Where soils have been subject to higher levels of disturbance, non-native annual grassland intergrades with ruderal vegetation. Characteristic non-native annual grasses commonly found on the hillsides include wild oats (*Avena fatua*) soft chess (*Bromus hordeaceous*) ripgut brome (*Bromus diandrus*), wild barley (*Hordeum* spp.), big quaking grass (*Briza maxima*), Italian ryegrass (*Lolium multiflorum*), and rattail fescue (*Vulpia myuros*), among others. Common non-native forbs include yellow star thistle (*Centaurea solstitialis*), bristly ox-tongue (*Picris echioides*), and long-beaked storksbill (*Erodium botrys*), among others.

On the flatter portions of the site, non-native annual grassland occurs on slightly alkaline and more mesic, *i.e.*, moist, soils. It occurs in smaller patches and intergrades with alkali meadow habitat. On these sites, non-native annual grassland is dominated by Italian ryegrass, rabbitfoot grass (*Polypogon monspeliensis*), Mediteranean barley (*Hordeum marinum* ssp. *gussoneanum*), bristly ox-tongue, sourclover (*Melilotus indica*), common vetch (*Vicia sativa*), and five-hook bassia (*Bassia hyssopifolia*).

Many wildlife species use these grasslands, especially when other elements are present: features such as cliffs, caves, ponds, or habitats with woody plants for breeding, resting, and escape cover (Mayer and Laudenslayer, 1988) (these features are generally absent from the project site). Characteristic reptiles that breed in grassland habitats include the western fence lizard (*Sceloporus occidentalis*). Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), and coyote (*Canis latrans*). Common birds are western meadowlark (*Sturnella neglecta*) and foraging raptors.

Alkali Meadow

Alkali meadow is typically a sparse to densely vegetated plant community consisting of relatively few low growing plant species. It occurs on fine-textured, more or less permanently moist, alkaline soils. Alkali meadow is distributed in valley bottoms and on the lower edges of alluvial slopes east of the Cascades and the Sierra Nevada as well as throughout the Sacramento and San Joaquin valleys and into Livermore Valley.

Alkali meadow is located near the margins of the westernmost freshwater marsh and the northeast corner of the project site. Alkali meadow is characterized by native species such as saltgrass (*Distichlis spicata*), alkali heath (*Frankenia salina*), alkali weed (*Cressa truxilensis*), and

spearscale, among others. Characteristic non-native species include Mediterranean barley and annual ryegrass.

On site, alkali meadow most closely corresponds to the saltgrass series as described in Sawyer and Keeler-Wolf (1995). Portions of this plant community would be classified as a palustrine emergent persistent seasonally flooded wetland as described by Cowardin, *et al.* (1979). Wildlife use is similar to non-native grasslands.

Valley Oak Woodland

Valley oak woodland is characterized as a savanna rather than a closed woodland with a grassy understory. Valley oak (*Quercus lobata*) is usually the only tree species present. This species is winter deciduous and California's largest broad-leaved tree. Canopy cover of this community is open seldom exceeding 30 to 40 percent absolute cover. It occurs on deep well-drained soils, usually in valley bottoms but can also occupy non-alluvial settings in the South Coast and Transverse Ranges. Species typically characteristic of this community include valley oak, creeping wildrye (*Leymus triticoides*), poison oak (*Toxicodendron diversilobum*), and blue oak (*Quercus douglasii*).

Within the project site, valley oak woodland covers a small area positioned mid-slope on the north-facing side of Vine Hill. This stand is dominated by valley oak, with a few coast live oak and California bay trees also present. Many of these trees have been vandalized and exhibit chainsaw cuts on the west side of their trunks approximately four feet off of the ground. A dense and pronounced stand of the native shrub skunk bush (*Rhus trilobata*) is a dominant associate in the shrub layer of this woodland. If valley oaks were absent from the project site, skunk bush stands on site would be considered its own vegetation community as it is abundant and distinct enough to be mapped and described. Other species present include poison oak (*Toxicodendron diversilobum*), Dutchman's pipevine (*Aristolochia californica*), Pacific sanicle (*Sanicula crassicaulis*), soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*), bedstraw (*Galium aparine*), as well as species found in non-native annual grassland.

Oak woodlands provide food and cover for many species of wildlife (Mayer and Laudenslayer, 1988), and oaks have long been considered important to birds and mammals as a food resource (i.e., acorns and browse). The ranges of about 80 species of mammals in California show substantial overlap with the distribution of valley oaks.

Emergent Freshwater Marsh

Emergent freshwater marsh typically occurs in low-lying sites that are permanently flooded with fresh water and lacking significant current. It is found on nutrient-rich mineral soils that are saturated for all or most of the year. This vegetation community is most extensive where surface flow is slow or stagnant or where the water table is so close to the surface as to saturate the soil from below. Freshwater marsh is distributed along the coast and in coastal valleys near river mouths and around the margins of lakes, springs, and streams (Holland, 1986). Within the project site, dense stands of emergent freshwater marsh occur across the southern portion of the property,

associated with a surface tributary, and along the margins of the ponds at the eastern and western edges of the site. Wildlife use of the ponds and marsh is described under *Wetlands* below.

Non-tidal Northern Coastal Saltmarsh

Non-tidal northern coastal saltmarsh consists of highly productive, herbaceous, and perennials up to three to four feet tall (Holland, 1986). Usually found along sheltered margins of bays, lagoons, and estuaries, this plant community develops a dense to moderate cover. Subject to continuously fluctuating salinity and water levels, northern coastal saltmarsh is typically dominated by a low diversity of salt-tolerant (*i.e.,* halophytes) aquatic plants. Depending on topography, clear transitions in species composition are frequently evident as one progresses from the lower to middle to high estuarine (brackish) marsh zones. Within the project site, the sole example of this plant association is characterized as non-tidal ruderal pickleweed-dominated salt marsh. These stands are not directly subject to tidal fluctuation, but have formed on fill soils placed into historic tidal saltmarshes associated with the Pacheco Slough at the edge of Suisun Bay. In such situations, it is not uncommon for fill soils placed on top of salt marshes to become alkaline by the effects of capillary action, which brings salts to the surface. In addition, tidal pumping, *i.e.,* the effects of tides on the water table far from the actual shoreline, can move salts through the soil profile.

Pickleweed (*Salicornia virginica*) is the dominant plant species, forming a closed to open canopy. Other native halophytic, *i.e.,* salt-tolerant, plant species occurring in this plant community on site include alkali weed, salt grass (*Distichlis spicata*), Mediterranean barley, rabbitsfoot grass, brassbuttons (*Cotula coronopifolia*), and spearscale (*Atriplex triangularis*).

At the project site, these areas are of insufficient size to support a typical assemblage of salt marsh animal species. Wildlife use is probably similar to surrounding and adjacent types, such as Freshwater Marsh and Ruderal.

Creeping Ryegrass Grassland

Creeping wildrye grassland typically forms dense patches dominated by creeping wildrye (*Leymus triticoides*). This plant community, also known as valley wildrye grassland, generally occurs on moist sites at low elevations, often adjacent to riparian or freshwater marsh habitat (Holland, 1986). Soils are frequently sub-alkaline and are seasonally inundated. In the San Francisco Bay Area, it also commonly occurs on clayey or sandy slopes near seeps or where the soil remains moist through spring and into the summer months. Creeping wildrye grassland occurs widely throughout the Central Valley and surrounding foothills.

On site, dense stands of creeping wildrye are present on the lower west-facing slope near the highway and below the saddle on a gentle southeast-facing slope near the northern end of the property. The stands at the western property boundary support between 25 and 40 percent cover of creeping wildrye, with the remainder of the vegetative cover being made up of non-native annual grass species. The stand at the northern end of the property is very dense, supporting 100 percent cover of creeping wildrye and little else.

At the project site, these areas are of insufficient size to support a typical assemblage of salt marsh animal species. Wildlife use is similar to surrounding and adjacent types (non-native annual grassland).

Wetlands

Natural hydrological processes in the vicinity of the project site have been severely altered by grading, filling, the realignment of adjacent Pacheco Creek, and the construction of levees and other flood control measures. The eastern and southeastern portions of the project site are situated on low-lying flats that are presumably part of the historical intertidal salt marsh at the confluence of Pacheco Creek, Walnut Creek and Grayson Creek.

Currently, there are two dominant hydrologic features on site. One consists of a nearly level drainage ditch carrying urban runoff from west of Interstate 680 and connecting with the realigned Pacheco Creek channel. The second consists of an artificial basin on the eastern portion of the property that supports open water year-round. Pacheco Creek, which borders the eastern edge of the property, is a flood control channel contained within earthen levees. Eastward flows across the property connect to the realigned Pacheco Creek channel. This realigned flood channel empties into Suisun Bay, approximately 4 miles north of the project site. Based on an 1898 historic USGS topographic map, tidal salt marshes of Pacheco Slough extended from the edge of Suisun Bay across the southern portion of the site to the location of Highway 680.

The wetland delineation performed for the project (Wood Biological Consulting, 2007b; Hicks, 2009) identified over 10 acres of wetlands and open water habitat falling under either Federal or State jurisdiction. These include a permanent pond in the northeast corner of the site. The pond is bordered by southern (*Typha domingensis*) and broadleaf cattail (*Typha latifolia*), common reed (*Phragmites australis*), prairie bulrush (*Bolboschoenus robustus*), punctuate smartweed (*Polygonum punctatum*). As wildlife habitat, the pond is a “lacustrine” habitat as defined by Mayer and Laudenslayer (1988). These habitats are very rich biologically, used by 18 mammals, 101 birds, 9 reptiles and 22 amphibians for reproduction, food, water and cover. Of these, of course, waterfowl and marsh birds are the most dependent: mallards (*Anas platyrhynchos*), green-winged teals (*Anas crecca*), great blue herons (*Ardea herodias*), great egrets (*Ardea alba*), marsh wrens (*Cistothorus palustris*), Suisun song sparrows (*Melospiza melodia maxillaris*),and red-winged blackbirds (*Agelaius phoeniceus*). Raccoons (*Procyon lotor*) and California voles (*Microtus californicus*) are likely present. Raptors that are typical of brackish marsh habitats include northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), white-tailed kite (*Elanus leucurus*), and American kestrel (*Falco sparverius*). During the survey, ESA noted red-winged blackbird (*Agelaius phoeniceus*), barn swallows (*Hirundo rustica*), egrets (*Egreta thula*), and pied-billed grebe (*Podilymbus podiceps*).

Regulatory Framework

Regulation of Waters Including Wetlands

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency

The US Army Corps of Engineers ("Corps") and the Environmental Protection Agency (" U.S. EPA") regulate the discharge of dredged or fill material into waters of the United States, including wetlands, under Sections 404 and 401 of the Clean Water Act. Projects that would result in the placement of dredged or fill material into waters of the United States require a Section 404 permit from the Corps. Some classes of fill activities may be authorized under General or Nationwide permits if specific conditions are met. Nationwide permits do not authorize activities that are likely to jeopardize the existence of a Threatened or Endangered species (listed or proposed for listing under the Federal Endangered Species Act). In addition to conditions outlined under each Nationwide Permit, project-specific conditions may be required by the Corps as part of the Section 404 permitting process. When a project's activities do not meet the conditions for a Nationwide Permit, an Individual Permit is required.

Section 401 of the Clean Water Act requires an applicant for a Corps permit to obtain state certification that the activity associated with the permit will comply with applicable state effluent limitations and water quality standards. In California, water quality certification, or a waiver, must be obtained from the Regional Water Quality Control Board, for both Individual and Nationwide Permits.

The Corps also regulates activities in navigable waters under Section 10 of the Rivers and Harbors Act. The construction of structures, such as tidegates, bridges, or piers, or work that could interfere with navigation, including dredging or stream channelization, may require a Section 10 permit, in addition to a Section 404 permit if the activity involves the discharge of fill. Finally, the federal government also supports a policy of minimizing "the destruction, loss, or degradation of wetlands." Executive Order 11990 (May 24, 1977) requires that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

State Policies and Regulations on Streams and Wetlands

The California Department of Fish and Game ("CDFG") regulates activities that would interfere with the natural flow of, or substantially alter, the channel, bed, or bank of a lake, river, or stream. These activities are regulated under the California Fish and Game Code (Section 1601 for public agencies and Section 1603 for private individuals) through a project-specific Streambed Alteration Agreement. Requirements to protect the integrity of biological resources and water quality are often conditions of such agreements. Requirements may include avoidance or minimization of the use of heavy equipment, limitations on work periods to avoid impacts on wildlife and fisheries resources, and measures to restore degraded sites or compensate for permanent habitat losses.

Federal and State Regulation of Special Status Species

Federal Endangered Species Act

The US Fish and Wildlife Service ("USFWS"), which has jurisdiction over plants, wildlife, and resident fish, and the National Marine Fisheries Service ("NMFS"), which has jurisdiction over anadromous fish and marine fish and mammals, oversee the Federal Endangered Species Act ("FESA"). Section 7 of the Act mandates that all federal agencies consult with the USFWS and NMFS to ensure that federal agencies actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. The federal agency is required to consult with the USFWS and NMFS if it determines a "may effect" situation will occur in association with the project. The FESA prohibits the "take" of any fish or wildlife species listed as Threatened or Endangered, including the destruction of habitat that could hinder species recovery.

Under Section 9 of the FESA, the take prohibition applies only to wildlife and fish species. However, Section 9 does prohibit the removal, possession, damage or destruction of any Endangered plant from federal land. Section 9 also prohibits acts to remove, cut, dig up, damage, or destroy an Endangered plant species in nonfederal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing receive no protection under Section 9 of the FESA. Section 10 of the FESA requires the issuance of an "incidental take" permit before any public or private action may be taken that would potentially harm, harass, injure, kill, capture, collect, or otherwise hurt (i.e., take) any individual of an Endangered or Threatened species. The permit requires preparation and implementation of a habitat conservation plan that would offset the take of individuals that may occur, incidental to implementation of the project by providing for the overall preservation of the affected species through specific mitigation measures.

Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act states that without a permit issued by the U.S. Department of the Interior, it is unlawful to pursue, hunt, take, capture, or kill any migratory bird.

California Endangered Species Act

California implemented its own Endangered Species Act ("CESA") in 1984. The state act prohibits the take of Endangered and Threatened species; however, habitat destruction is not included in the state's definition of take. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. The CDFG administers the act and authorizes take through Section 2081 agreements (except for designated "fully protected species," see below). Regarding rare plant species, CESA defers to the California Native Plant Protection Act of 1977, which prohibits importing of rare and endangered plants into California, taking of rare and endangered plants, and selling of rare and endangered plants. State-listed plants are protected mainly in cases where state agencies are involved in projects under CEQA. In this case, plants listed as rare under the California Native Plant Protection Act are not protected under CESA but can be protected under CEQA.

California Fish and Game Code

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.3 of the California Fish and Game Code prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs.

California Fully Protected Species

California law (Fish and Game Code Sections 3511, 4700, 5050 and 5515) allows the designation of a species as Fully Protected. This is a greater level of protection than is afforded by the California Endangered Species Act, since such a designation means the listed species cannot be taken at any time.

Local Plans and Policies

Contra Costa County General Plan

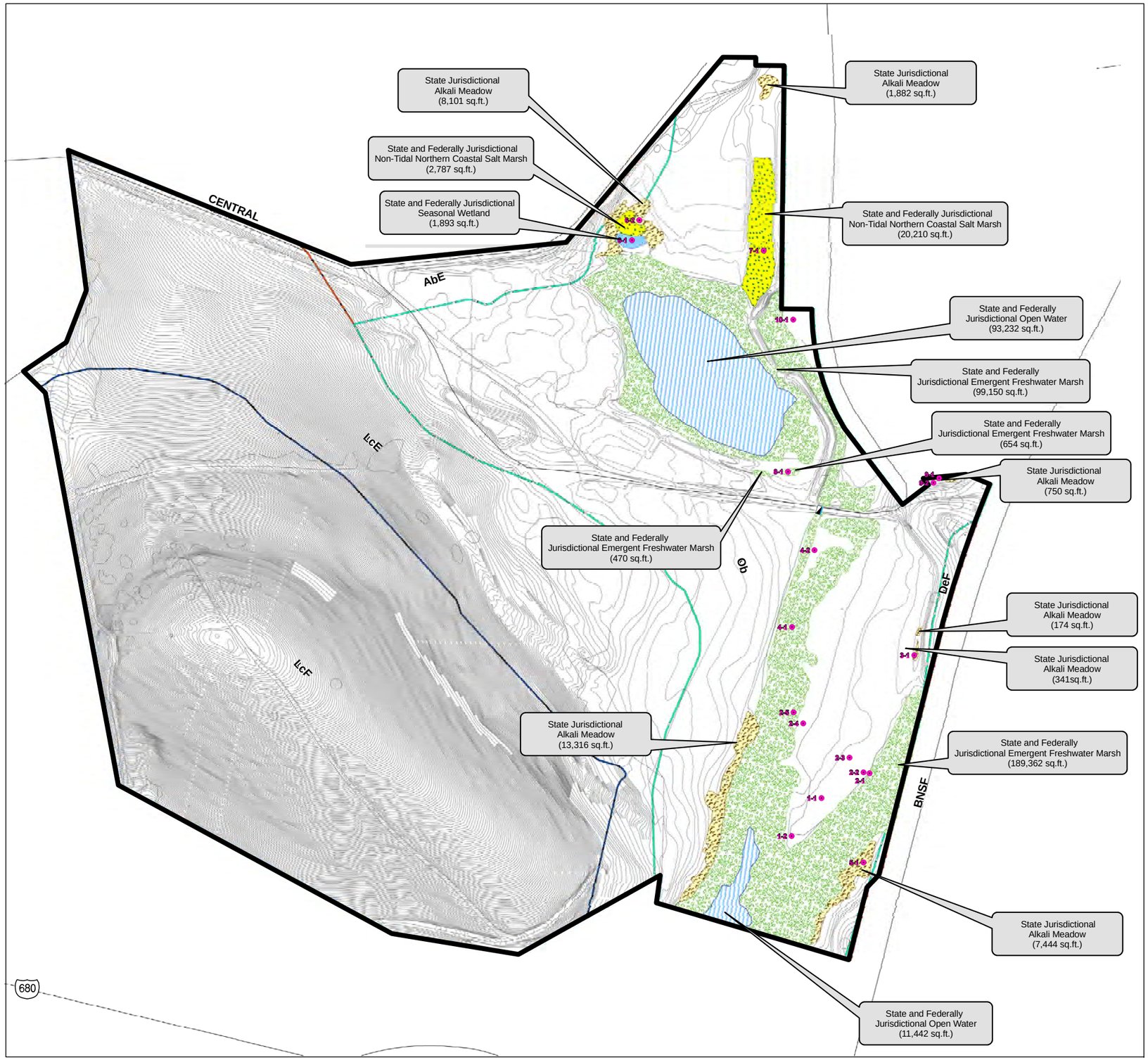
Contra Costa County set forth a number of natural resource policies in the *Contra Costa County General Plan* (2005) ("*General Plan*") that may be pertinent to the activities in the project vicinity. In particular, the *General Plan* adopted policies and designated Significant Ecological Areas throughout the County. A number of these areas occur in general proximity to the project site, of which #14 *Shoreline between Martinez Waterfront and Concord Naval Weapons Station* is the closest, located approximately 2.5 miles north of the project site. According to the area description: "Tidal marsh here supports salt marsh harvest mouse, California clapper rail and possibly black rail. Ornate shrew, black-shouldered kite and Suisun song sparrow also occur here."

The goals and policies related to biological resources are summarized as follows:

- To protect ecologically significant lands, wetlands, plant and wildlife habitats.
- To protect rare, threatened and endangered species of fish, wildlife and plants, significant plant communities, and other resources which stand out as unique.
- To attempt to achieve a significant net increase in wetland values and functions within the County.
- To encourage the preservation and restoration of the natural characteristics of the San Francisco Bay/Delta estuary and adjacent lands.

Regulated Wetlands at the Project Site

Wetlands at the site were formally delineated by Wood Biological Consulting (2007b), and this report is incorporated by reference. Based on this survey, the project site supports a rather extensive band of freshwater marsh across the southern portion of the site. Additional freshwater marsh vegetation is present at the margin of the pond. In addition, the project site includes seasonal wetlands and wetlands dominated by pickleweed, subject to seasonal inundation. These habitats meet the federal wetland definition and are subject to both federal and State jurisdiction (Hicks, 2009). Regulated wetlands on site are mapped in **Figure 4.C-2** and summarized in **Table 4.C-1**.



Project Site

Culvert

Data Points

Hydrologic Features

Alkali Meadow

Freshwater Marsh

Non-tidal Northern Coastal Salt Marsh

Open Water

Seasonal Wetland

Soil Series

AbE Altamont

DeF Dibble

LcE; LcF Lodo

Ob (Hydric) Omni

SUMMARY OF JURISDICTIONAL HABITATS

Habitat Type	Federal and State Jurisdiction* (sq.ft.)	State Jurisdiction** (sq.ft.)
open water	104,674	0
freshwater marsh	289,636	0
alkali meadow	0	32,008
seasonal wetland	1,893	0
non-tidal northern coastal salt marsh	22,997	0
Total (acres)	**419,200 9.62**	**32,008 0.73**

* Regulated by the USACE, RWQCB and CDFG

** Regulated only by the RWQCB and/or CDFG

0 300 Feet

SOURCE: Wood Biological Consulting

Bayview Residential Project . 208078

Figure 4.C-2

Wetland Delineation and Jurisdictional Determination

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TABLE 4.C-1
SUMMARY OF JURISDICTIONAL HABITATS AT THE BAYVIEW PROJECT SITE

Habitat Type		Federal and State Jurisdiction[a]	State Jurisdiction Only[b]
Waters of the U.S./State (including open water)		104,674 sf (2.4 acres)	N/A
Emergent Freshwater Marsh		289,636 sf (6.65 acres)	N/A
Non-tidal Northern Coastal Salt Marsh		22,997 sf (0.53 acres)	N/A
Seasonal Wetland		1,893 sf (0.04 acres)	N/A
Alkali Meadow		N/A	32,008 sf (0.73 acres)
	Total	419,200 sf (9.62 acres)	32,008 sf (0.73 acres)

[a] Regulated by the Corps, Regional Water Quality Control Board ("RWQCB") and CDFG
[b] Regulated only by the RWQCB and/or CDFG

SOURCE: Wood Biological Consulting, 2008.

Special Status Species in the Project Site

A number of species known to occur in the project vicinity are protected pursuant to federal and/or State of California endangered species laws, or have been designated Species of Special Concern by CDFG. In addition, Section 15380(b) of the California Environmental Quality Act (CEQA) Guidelines provides a definition of rare, endangered, or threatened species that are not included in any listing.[2] Species recognized under these terms are collectively referred to as "special status species." For the purposes of this EIR, special status species include:

- Plant and wildlife species listed as rare, threatened or endangered under the federal or state endangered species acts;
- Species that are candidates for listing under either federal or state law;
- Species formerly designated by the USFWS as Species of Concern or designated by CDFG as Species of Special Concern;
- Species protected by the federal Migratory Bird Treaty Act (16 U.S.C. 703-711); and/or
- Species such as candidate species that may be considered rare or endangered pursuant to Section 15380(b) of the CEQA *Guidelines*.

[2] For example, vascular plants listed as rare or endangered or as List 1 or 2 by the California Native Plant Society (CNPS) are considered subject to Section 15380(b).

The special status species list presented in **Table 4.C-2** includes species for which potential habitat (i.e., general habitat types) occurs on or in the vicinity of the project site. Species for which generally suitable habitat occurs but that were nonetheless determined to have low potential to occur in the project area are also listed in Table 4.C-2. This table also provides the rationale for each potential-to-occur determination. Species observed or with a moderate to high potential to occur in the project area are discussed in further detail below.

Species whose occurrence potential is considered moderate are described in further detail, below.

Special Status Plants in the Project Site

Wood (2007a) considered a total of 68 special status plant species with the potential to occur in the project site. A single specimen of Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*) was recorded on the property in 2005; this species was not located again during the properly timed summer survey performed as part of this analysis. The timing of the 2007 surveys was not adequate to determine the presence or absence of two spring-flowering species. Abundant suitable habitat for alkali milk-vetch (*Astragalus tener* var. *tener*) and fragrant fritillary (*Fritillaria liliacea*) is present on site; neither of these species would have been recognizable during the May 2007 survey. A 2008 survey was therefore timed (March 25) to coincide with the flowering period of both of the target species. No special status plants were found on the project property during the survey in 2008. This EIR concludes that, based on focused floristic surveys, no federally or State listed endangered, threatened, rare, or candidate plant species were detected within the project site.

Special Status Wildlife in the Project Site

Amphibians

California red-legged frog. This species is federally listed as threatened and is a California Species of Special Concern. The project site is not located within any of the designated critical habitat units in Contra Costa County. Red-legged frogs reside in lowlands and foothills in or near permanent or semi-permanent water sources such as lakes, stock ponds, and slow-moving streams with deep pools and dense shrubs or emergent aquatic vegetation. Where water sources are not permanent, red-legged frogs require access to dry-season upland aestivation habitat in the form of mammal burrows. Red-legged frogs require at least 11 weeks of permanent water after egg laying for larval development. Wetlands on the project site with perennial water provide suitable habitat for this species.

Northwestern pond turtle. The western pond turtle, a federal Species of Concern and California Species of Special Concern, is a thoroughly aquatic turtle found in permanent ponds, rivers, streams, channels, and irrigation ditches with rocky or muddy bottoms, and emergent vegetation. Basking areas used by this species include partially submerged logs, rocks, vegetation mats, and open mud banks. Habitat destruction and stream course degradation are the primary threats to this species. Wetlands on the project site with perennial water provide suitable habitat for this species.

TABLE 4.C-2
SPECIAL STATUS SPECIES CONSIDERED POTENTIALLY OCCURRING AT THE BAYVIEW PROJECT SITE

Common Name Scientific Name	Status USFWS/CDFG	Habitat Requirements	Occurrence Potential
Invertebrates			
Callippe silverspot butterfly *Speyeria callippe callippe*	FE/--	Occurs in grasslands with a native component. Host plant is *Viola pedunculata.*	**Low.** Host plant absent in surveys.
Vernal pool fairy shrimp *Eucycloglobius newberryi*	FE/CSC	Brackish water habitats; shallow lagoons and lower stream reaches; still but not stagnant water with high oxygen levels.	**Low.** No suitable habitat on the project site or in the adjacent areas due to fluctuating water levels.
Plants			
Alkali milk-vetch *Astragalus tener var. tener*	CDFG "Special Plant"	Alakali playas, valley and foothill grassland, vernal pools	**Absent from the project area.** Suitable habitat present but species not found during surveys in 2007/8.
Fragrant fritillary *Fritillaria liliacea*	CDFG "Special Plant"	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland	**Absent from the project area.** Suitable habitat present but species not found during surveys in 2007/8.
Amphibians and Reptiles			
California red-legged frog *Rana aurora draytonii*	FT/CSC	Can use virtually any aquatic system; requires surface water of 20 inches minimum depth from March – July; associated uplands, dispersal, and estivation habitat also critical.	**Low/Moderate.** 2.4-acre open water pond area is suitable habitat.
California tiger salamander *Ambystoma californiense*	--/CSC	Grasslands; requires vernal pools or other seasonal water sources for breeding; also requires underground refuges, especially ground squirrel holes.	**Low.** Habitat present within 2 miles but absent from the project area. The pond provides potential breeding habitat, but the grassland areas on site lack burrows for upland refuge.
Northwestern pond turtle *Clemmys marmorata marmorata*	--/CSC	Permanent or nearly permanent water; marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites (open mud banks, partly submerged logs, etc.).	**Low/Moderate.** 18-acre storm water pond is suitable but no turtles have been observed.
Birds			
Burrowing owl *Athene cunicularia*	--/CSC	Open grasslands or similar vegetation; rodent burrows (usually ground squirrel) required for burrows.	**Low.** Requires flat, open terrain and ground squirrel activity (primary burrow excavators).
California black rail *Laterallus jamaicensis coturniculus*	--/CT	Salt marshes along larger bays; also tidal fresh, brackish, and salt marsh.	**Absent from the project area**. Habitat present within 2 miles but absent from the project area.
California clapper rail *Rallus longirostris obsoletus*	FE/CE	Saltwater and brackish marshes traversed by tidal sloughs. Pickleweed areas; forages in mud-bottom sloughs. San Francisco Bay area.	**Absent from the project area.** Habitat present within 2 miles but absent from the project area.
Salt-marsh common yellowthroat *Geothlypis trichas sinuosa*	FSC/CSC	Resident of San Francisco Bay region salt and fresh water marshes.	**Low.** Small and fragmented marsh size reduces likelihood of presence.

TABLE 4.C-2 (Continued)
SPECIAL STATUS SPECIES CONSIDERED POTENTIALLY OCCURRING AT THE BAYVIEW PROJECT SITE

Common Name Scientific Name	Status USFWS/CDFG	Habitat Requirements	Occurrence Potential
Birds (cont.)			
Suisun song sparrow *Melospiza melodia maxillaris*	FSC/CSC	Tidal brackish marshes, Suisun Bay	**Low.** Small and fragmented marsh size reduces likelihood of presence
Tri-colored blackbird *Agelaius tricolor*	--/CSC	Colonial nester in wetland areas of emergent vegetation; requires associated open water; most numerous in Central Valley.	**Low.** Insufficient extent of suitable vegetation on site
Nesting and foraging raptors (see text below)	3503.5	Open grassland, meadows, marshes for foraging; trees for nesting.	**Moderate.** Project site provides habitat for several species.
Mammals			
Salt marsh harvest mouse *Reithrodontomys raviventris*	FE/CE	Saline emergent wetlands of San Francisco Bay and its tributaries. Primary habitat is pickleweed.	**Absent from the project area.** Habitat present within 2 miles and pickleweed is found on site but no tidal action or other habitat elements.

Federal categories (U.S. Fish and Wildlife Service):
FE = Federally listed as Endangered;
FT = Federally listed as Threatened;
FSC = Federal Species of Concern (former Category 2 species).

State categories (California Department of Fish and Game):
CE = State listed as Endangered;
CT = State listed as Threatened;
CSC = State Species of Special Concern;
3503.5 = Protected under Cal. Fish and Game Code Section 3503.5.

High Potential = Species expected to occur and meets all habitats defined in list.
Moderate Potential = Habitat only marginally suitable or suitable but not within species range.
Low Potential = Habitat does not meet species requirements as currently understood in the scientific community.

SOURCE: California Department of Fish and Game 2008, U.S. Fish and Wildlife Service 2008.

Birds

Great horned owl (*Bubo virginianus*). Great horned owls occur throughout North America and are found in a variety of wooded habitats. These large raptors prey on small to medium-sized mammals such as voles, rabbits, skunks, and squirrels. Great horned owls can often be seen and heard at dusk, perched in large trees. They roost and nest in large trees such as pines or eucalyptus. They often use the abandoned nests of crows, ravens, or sometimes squirrels (Ehrlich et al., 1988; Sibley, 2000). Great horned owls may use the oak woodland on the project site for roosting or nesting and may forage over grassland and ruderal habitat for voles and other small mammals.

Northern harrier (*Circus cyaneus*). Northern harrier nest and forage along wet meadows, sloughs, savanna, prairie, and marshes, feeding on small mammals, such as California vole and mice. Destruction of marsh habitat is the primary reason for the decline of this species. Northern harrier may use the wetlands and grasslands on the project site for foraging and nesting.

American kestrel (*Falco sparverius*). This relatively small member of the falcon family preys on small birds and on mammals, lizards, and insects. The kestrel is most common in open habitats, such as grasslands or pastures. American kestrels usually nest in tree cavities (Sibley, 2000; Ehrlich et al., 1988); mature oaks on site may provide this species with nesting habitat.

Impacts and Mitigation Measures

Significance Criteria and Analysis Methodology

Based on Appendix G of the CEQA *Guidelines*, implementation of the project would have a significant effect on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan, including the Santa Rosa Plain Conservation Strategy.

For the analysis presented below, project-specific impacts resulting from implementation of the project were considered to be significant if they had the potential to:

- Have a substantial adverse effect on special status species that were found to have moderate or high potential to occur;
- Result in the fill of or otherwise cause degradation of potentially jurisdictional waters;
- Have a substantial adverse effect on areas designated as sensitive habitat in this EIR; or
- Otherwise exceed the significance criteria outlined above.

Impacts

Impact C.1: Implementation of the project would result in the loss of degraded California annual (non-native) grassland within the project boundaries, which is used by special status raptors as foraging habitat. (Less than Significant)

The loss of this community does not constitute a significant impact to biotic resources due to its relative abundance locally and regionally, and to the degraded nature of much of this community on the project site and the extensive presence of non-native species.

Mitigation: None required.

Impact C.2: Project activities would result in temporary disturbance to jurisdictional wetlands. (Significant)

Although the project as designed would avoid all permanent "fill" of jurisdictional wetlands, the project would require supporting infrastructure. Specifically, the project could require a new water supply pipeline underneath the flood control channel ("CCCFCD") to form a connection with Central Avenue (on the northeastern end of the site) (see Section 4.K, *Public Services and Utilities*, for a detailed discussion of the pipeline). The project site supports a rather extensive band of freshwater marsh across the southern portion of the site; additional freshwater marsh vegetation is present at the margin of the pond. In addition, the project site includes seasonal wetlands and wetlands dominated by pickleweed, subject to seasonal inundation. These habitats are presumed to be subject to both federal and State jurisdiction. Due to their wide distribution around the southern perimeter of the project site, the project would likely result in temporary impacts to these wetlands.

> **Mitigation Measure C.2*:*** Once detailed plans are available for construction of the water supply pipeline, the project sponsor shall retain a qualified biologist to quantify the extent and magnitude of impacts to wetlands, and the project sponsor shall replant disturbed areas with the same native species as those removed and monitor their survival for a period of five years (and take remedial action if necessary), or until pre-project conditions can be demonstrated. It is anticipated that a Clean Water Act Section 404 Nationwide Permit would be required, and if so, additional conditions may be imposed. If required, the 404 Nationwide Permit shall be obtained prior to issuance of a grading permit.

Significance after Mitigation: Less than Significant.

Impact C.3: Project activities would degrade adjacent jurisdictional wetlands. (Significant)

Although no project activities would occur in jurisdictional wetlands (except as described in Impact C-2) project activities may occur in the vicinity of the brackish marsh habitat and pond

located at the eastern and southern borders of the project area. Accidental disturbance or fill associated with construction activities is possible.

> **Mitigation Measure C.3:** When working near brackish marsh areas, the edge of the wetland a buffer area of 100 feet, shall be clearly marked with orange mesh fencing or equivalent to indicate limits of disturbance.

Significant after Mitigation: Less than Significant.

Impact C.4: Project activities would have a deleterious effect on special status bird species. (Significant)

Habitat loss for nesting birds from the removal of oak trees, creeping wildrye grassland and annual grassland, and the long-term effects of increased human activity (including pets, traffic, the increase in non-native landscape plantings) would adversely affect nesting birds during construction and result in a permanent decrease in native bird species productivity and diversity. Long-term habitat losses are evaluated against a baseline of existing residential and commercial uses surrounding the project site and thus would not be significant, except for the oak woodland impacts which are mitigated by Mitigation Measure C-5, below. However, breeding birds present at the time of construction, both special status raptors and birds protected under the Migratory Bird Treaty Act are at risk and loss of their nests could be a significant impact.

> **Mitigation Measure C.4:** Habitat removal shall not occur during the nesting season for raptors or migratory birds (March 15 – June 15). If construction is initiated during this period, pre-construction survey by a qualified biologist shall be conducted to determine if breeding birds are present, and if so, the loss of the nest itself, immediate nesting substrate shall be avoided until after the breeding season or the fledging of young. Additionally, a buffer area of 300 feet shall be maintained within which no construction activity shall be allowed.

Significant after Mitigation: Less than Significant.

Impact C.5: The Project would result in the loss of 34 native oak trees, each with a trunk diameter of 6.5 inches or larger, which are "Protected Trees" as defined in the *Contra Costa County Zoning Code*, and which constitute an inholding of Oak Woodland. (Significant)

> **Mitigation Measure C.5:** The *Contra Costa County Zoning Code* recognizes the importance and diminishing extent of protected oak woodlands. For the oak woodland habitat that is removed, oak woodland habitat shall be replaced offsite at an agreed upon location with an equal or larger area and equal number of trees (34). Alternatively, trees may be planted at locations that currently support disturbed or nonnative habitats, in the ratio of three new oaks planted for each tree lost. In either case, offsite mitigation must take place on land which would be maintained as open space in perpetuity.

Significant after Mitigation: Less than Significant.

Impact C.6: Project activities in the vicinity of the pond would affect California red-legged frogs or western pond turtle. (Significant)

Project activities would take place in the vicinity of the 2.4-acre open water pond habitat area in the northeastern portion of the site. Disturbance from these activities could potentially affect California red-legged frogs, a listed species, or western pond turtle, a State species of special concern, as the pond may provide habitat for both species; this would be a significant impact.

> **Mitigation Measure C.6:** The following measures shall be implemented if a preconstruction survey to USFWS-approved protocol is completed and it is established that CRLF is present. If the USFWS concludes that the species may be considered absent from the site, these measures will not need to be implemented:

- The project sponsor shall install exclusionary fencing, such as silt fences, around the process ponds and around all construction areas that are within 100 feet of or adjacent to potential California red-legged frog ("CRLF") habitat. Once fencing is in place, it shall be maintained by the project sponsor until completion of construction within or adjacent to the enclosure.

- Prior to commencement of any earthmoving activities, the project sponsor shall retain a qualified monitoring biologist to train all construction personnel and work crews on the sensitivity and identification of the CRLF and the penalties for the "take" of this species. In addition, visual materials shall be provided to assist in identifying the species. Training sessions shall be repeated for all new employees before they access the project site and periodically throughout project construction.

- The monitoring biologist shall demarcate construction avoidance areas in the field and monitor construction activities within 300 feet of aquatic habitat for CRLF. The demarcation shall remain on-site until all initial vegetation clearing and habitat disturbance is completed.

- All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 100 feet from any riparian habitat or water.

- The project sponsor shall ensure ongoing general maintenance of the pond and adjacent riparian habitat in perpetuity.

- If a California red-legged frog is identified in the project work area, all work in the immediate area shall immediately cease and the USFWS shall be contacted immediately. Work shall not begin again until so authorized by the USFWS.

Significant after Mitigation: Less than Significant.

Impact C.7: The project would interfere with the movement of native resident or migratory wildlife species or with migratory wildlife corridors. (Less than Significant)

The extensive residential development to the south and west of I-680 and refineries to the north and east effectively make Vine Hill a virtual habitat island, with the nearest large expanse of relatively undisturbed upland habitat in the northeast corner of the Briones Valley quadrangle (about 3 miles to the southwest), which extends west into the Pinole Creek watershed. A unit of Critical Habitat for the California red-legged frog is within the Briones Hills, about 7 miles distant. The marshes associated with the northern end of Pacheco Creek are mostly intact to the east of its discharge into Suisun Bay, which puts those resources about 2.5 miles away to the northeast. Undeveloped upland areas to the south and west, and salt marsh habitat to the north and east, do not share species which would travel between them. This, plus the small size of the site, the degree of fragmentation of similar habitats in the vicinity, and the home ranges of terrestrial wildlife associated with these habitats suggest that there would not be a significant incremental increase in the impediments to wildlife movement.

Mitigation: None required.

Cumulative Impacts

Impact C.8: The project, in conjunction with past, present and reasonably foreseeable projects, would not cumulatively affect biological resources. (Less than Significant)

A cumulative impact arises when two or more individual projects, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the project's incremental effects must be viewed in connection with the effects of past, current and reasonably foreseeable projects.

County staff identified approved, but not yet completed projects within the vicinity of the project site area. Each of the projects identified for consideration in the cumulative scenario would introduce new residential uses to the project vicinity. They include Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane) and Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard). These projects reviewed are generally of the same scale as the Bayview Residential project and would further reduce the quality and quantity of wildlife habitat. However, given the discussion under Impact C-7 relative to wildlife movement, the incremental increase of the Bayview Residential Project would not be cumulatively significant. To the extent that these other projects would affect special status species, wetlands or oak woodlands, effects of the Bayview Residential Project would not result in a considerable contribution to any potential cumulative effect.

Mitigation: None required.

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D. Cultural Resources

Introduction

This section evaluates the potential for prehistoric/protohistoric or historic archaeological resources to be located on or beneath the surface of the project site. Information presented in this chapter is based on a cultural resources evaluation performed by the archaeological consulting firm Archeo–Tec, Inc., supplemented by information presented in the *Contra Costa County General Plan ("General Plan")*, previously published EIRs and *The History of Contra Costa County, California*. Although the numerous original sources cited in the Archeo–Tec report have not been included in this chapter, the Archeo–Tec report may be reviewed at the Contra Costa County Department of Conservation and Development.

Archeo–Tec conducted an archival records search at the Northwest Information Center at Sonoma State University to review all archaeological studies and recorded sites within a half–mile radius of the project site. Archeo–Tec also consulted with the staff of the Native American Heritage Commission in Sacramento in order to determine whether any portion of the project property may encroach upon any sites deemed sacred by members of the local Native American Community. Two Archeo–Tec archaeologists trained in the identification of prehistoric and historic period resources conducted a surface reconnaissance of the project site to search for signs of cultural deposits. The results of the archival and field research are summarized in this chapter.

Setting

Natural Context

The project site is located within the San Francisco Bay region. Approximately 200 million years ago the floor of the Pacific Ocean was subducted beneath the western edge of the North American Plate, forming the distinctive rocks of the Franciscan Complex. The Franciscan Complex rocks form the basement for the Coast Ranges east of the San Andreas Fault and underlie much of Contra Costa County. The Franciscan Complex primarily consists of greywacke, sandstone and argillite but also contains smaller amounts of greenstone, radiolarian ribbon chert, limestone, serpentine and a variety of high–grade metamorphic rocks. Franciscan rocks in the Bay Area range in age from about 200 million to 80 million years. Sobrante sandstone, the Orinda Formation—a conglomerate with abundant clasts of Franciscan bedrock—and the volcanic Pinole Tuff are the other major rock types in the area.

The San Francisco Bay region is located within the Coast Ranges Geomorphic Province of California, which probably began to form 2 to 3 million years ago and is characterized by a system of northwest–southeast trending longitudinal mountain ranges and valleys, such as the Las Trampas Ridge and the San Ramon Valley, that are controlled by faulting and folding. Two major faults—the Las Trampas and Bollinger faults—are in the immediate area.

Alluvial deposits from the creeks that flow from the East Bay Hills created today's flatlands, such as the alluvial fan on which the present project site is situated. The project site is situated very close to Pacheco Creek, which connects with the series of Bays to the north. This water source and the associated marshy environment created a hospitable environment for the region's prehistoric inhabitants.

Prehistoric Background

The proposed project site is located at the northeastern edge of an area that was occupied by the Penutian–speaking Bay Miwok at the time the Spanish arrived in northern California in the 18th century. Their territory encompassed much of the San Francisco Bay area and extended eastward to the Central Valley. The Bay Miwok are known to have occupied this region at least since 300 A.D., though their presence may date back as far as 2500 B.C. The language spoken in the area prior to the Miwok's presence is unknown, but was probably a Hokan language. The archaeological record indicates that Contra Costa County has been inhabited for at least 9,000 years.

At the time of contact with the Europeans, there were an estimated 7,000 to 10,000 Native Americans living in the coastal area stretching from Point Sur in Monterey County, northward through the Coast Ranges to the Sacramento River Delta and eastward to the San Joaquin River. The Bay Miwok were one of five geographically and linguistically distinct groups in the area, including Costanoan, Patwin, Wappo, Coast Miwok and Bay Miwok.

The Costanoans are often referred to in anthropological literature as the Ohlone. "Costanoan" was the name the Spanish used to refer to the Ohlone; the name was derived from "Los Costaños," which is Spanish for "the coastal people." Ohlone was the most widespread of the five local languages and was spoken on the San Francisco peninsula, in the Santa Clara Valley and the mountains to the east and west of the valley and throughout much of the East Bay. Bay Miwok was spoken in the interior valleys of the East Bay, perhaps extending as far as the shoreline in the vicinity of present–day East Oakland. Coast Miwok was spoken throughout the Marin Peninsula. Patwin was spoken on the north shores of Suisun Bay. Wappo was spoken in the upper Napa and Sonoma Valleys. Although mutually unintelligible, the Costanoan, Bay Miwok and Coast Miwok languages all derive from Utian stock; Utian is one of four language families collectively described as Penutian languages (the others being Wintuan, Maiduan and Yokutsan).

Like other west–central California Native American Groups, the Bay Miwok were organized into autonomous territorial political groups. Each territorial group was a community of interrelated families that occupied and occasionally defended a common territory, seasonally cooperated to harvest various food resources and jointly participated in ceremonies viewed as intrinsic to cosmological maintenance or successful passage through life events. The Bay Miwok were divided into five autonomous tribelets: Saclan, Chupcan, Volvon, Julpun and Tatcan. The project site was likely within Chupcan territory. The size of most tribelet populations ranged between 200 and 400 people. Settlements were often located adjacent to water sources—permanent or seasonal.

The Bay Miwok subsisted on the bountiful natural food resources that characterized the Bay Area. Much of their diet was seasonal, focusing on foods that were particularly abundant at different times of the year. Staples of their diet included fish (principally salmon), shellfish, water fowl, tule elk and acorns. Acorns were pounded by mortar and pestle to form a mush that was often flavored with berries. Other plant foods, gathered predominantly by women, included seeds (such as wild oats, balsam root, ripgut grass, redmaids and buttercup), nuts (buckeye, laurel, hazelnut and pine), roots and greens. Men contributed to the food supply by fishing and hunting for game. Larger animals were hunted with bows and obsidian–tipped arrows and traps and snares were set for smaller mammals such as rabbits. The Bay Miwok fished from creeks using nets and/or basket traps deployed from small rafts constructed of tule rushes, propelled by double–bladed paddles.

The Bay Miwok relied on the natural environment in other aspects of their lives as well. They utilized local rock and mineral sources to manufacture cutting, scraping and other tools and local sandstone for grinding and pounding tools. Cinnabar and hematite could be used to barter with non–coastal groups for more exotic materials, such as obsidian. Animal remains were also particularly useful. In addition to the use of pelts and feathers for clothing and bedding, sinew was used for bow strings and teeth, bones, claws and beaks were employed as tools, including awls, pins, daggers, scrapers and knives. Feathers, bones and shells were used in a wide variety of personal ornamentation.

The houses of the Bay Miwok were conical or dome–shaped structures of interlaced poles and twigs covered with brush or tule bulrushes. The houses were grouped together around a central cleared area. The small villages were generally located near sources of fresh water such as creeks and springs, though they were also found on alluvial flats and along the first set of ridges between valleys and mountain ranges.

An extended family household averaging about 15 persons comprised the basic Miwok social unit, though the size could vary considerably. Bay Miwok society was divided into moieties and further divided into clans. The largest social unit was the tribelet, which consisted of a group of interrelated villages under the leadership of a single headman. As previously noted, tribelets ranged in size from 200 to 400 individuals and were politically and socially autonomous.

Infiltration of Europeans into the Bay Area rapidly led to the decimation of the Bay Miwok people. They were forced into servitude on the Spanish missions and large “rancherias” in northern Alameda and Contra Costa counties. Disease and overwork, as well as conflicts with other tribal groups, led to their decline. By the beginning of the American historical period (1848), the Bay Miwok had ceased to exist as an ethnic or linguistic entity.

Historic Background

Spanish/Mexican and Early American Eras (1769—1848)

The first expedition into the East Bay occurred in 1772 when Pedro Fages and his party explored the San Francisco Bay and Carquinez Strait, including the Diablo and Livermore Valleys near Concord. In the spring of 1776, Captain Juan Bautista de Anza established the San Francisco

Presidio and by April 1, de Anza's men had traveled through San Francisco, down the peninsula and up the East Bay shoreline, passing through Antioch and the plains of eastern Contra Costa County toward Tracy.

The establishment of the Mission Dolores in San Francisco in the same year began the "Mission Period" in the San Francisco Bay area, part of an effort by the Spanish to spread Christianity through the establishment of 21 Roman Catholic missions in Alta California in the late 18th and early 19th centuries. The missions in the East Bay were used to graze thousands of cattle and sheep, as well as for grain production and housed several hundred native Bay Miwok Indian converts. The first Bay Miwok to be missionized were the Saclan (south) at Mission San Francisco in 1794.

Most of California south of Sonoma was under Mexican rule from the 1820s to 1848. In the years following the 1810 Mexican Revolution, Mexican political instability added to the diminishing conditions at and funding to, the Missions. As a result, the Mission's power and influence waned during this period. Historic settlement in the region began in 1823 when large grants of land were awarded by the Mexican government to settlers. In 1833–34, the Mexican government secularized the Spanish missions and many mission lands were also subsequently granted to individuals who established the great ranchos, or vast cattle raising estates. The project site was part of the *Rancho Las Juntas*, which was subsequently obtained in 1832 by William Welch, a Scotsman and after which was known as the Welch Rancho.

At the end of the Mexican War in 1848, all of Alta California was ceded to the United States under the Treaty of Guadalupe Hidalgo. The date of July 8, 1846 marked the conversion of California from Mexican to American jurisdiction. On this day, a landing party from the sloop–of–war *Portsmouth*, under the command of Captain John B. Montgomery, waded ashore at the town of Yerba Buena (present–day San Francisco) and raised the stars and stripes to the top of the flagpole in the town's dusty plaza, thereby claiming California for the United States.

Middle to Late Nineteenth Century (1848—1900)

In the mid–nineteenth century, much of the former rancho lands were subdivided and sold off to the influx of settlers brought to California by the Gold Rush. Contra Costa County was one of the original 27 counties established when the State was founded in 1850. The County originally encompassed 1,500 square miles of territory, but that was reduced by nearly one–half when southern and western portions of the County were ceded, along with northern portions of Santa Clara County, to create Alameda County in 1853. Following this land transfer, Contra Costa County covered an area of 877 square miles.[1]

The County was originally called Mt. Diablo County, but the name was changed to Contra Costa County prior to its incorporation. The name derives from the Spanish language, in which "contra costa" means "opposite coast." This refers to the County's location on the opposite side of San Francisco Bay from the town of Yerba Buena (present–day City of San Francisco). Many

[1] According to the *General Plan*, the current jurisdictional area of the County is 805 square miles, including 73 square miles of water.

local names in the County—such as Martinez, Pacheco and Moraga—also have roots in the Spanish language, representing the family names of the recipients of large land grants from the King of Spain.

The city of Martinez, first settled by Europeans in 1823, was laid out as a surveyed and subdivided town in 1849; its name is in honor of the *commandante* of the San Francisco Presidio, Ignacio Martinez. Initially incorporated by the Court of Sessions in 1851, the Supreme Court subsequently declared the incorporation act void. Martinez continued functioning as a robust village until it was successfully incorporated in 1867. Martinez has been the county seat of Contra Costa County since 1851. The City developed as a center for wheat shipping, following the gradual decline of nearby Pacheco in that role.

Twentieth Century

The twentieth century brought about further development in and around Martinez. Shell Oil built an oil refinery on a 400–acre site adjacent to Martinez in 1915, employing over 2,000 men and precipitating significant population and building growth in the area. Additional oil refineries and other industries, such as ore mining and fertilizer manufacture, located in or near Martinez during the early years of the twentieth century. The region continues to be an important petroleum port and processing location.

Archeological Record

Prehistoric research in the San Francisco Bay Area is one of the oldest archaeological traditions in California. When U.C. Berkeley archaeologist N.C. Nelson conducted the first intensive archaeological survey of the region between 1907 and 1908, he recorded no less than four hundred and twenty–five shellmounds on or near the shoreline of the Bay. They were encountered in a wide variety of places, including adjacent to springs or streams, on exposed bluffs or headlands, or in salt marshes, but the majority were located within 50 feet of the Bay and the largest mounds were typically encountered at the head of sheltered coves.

The large prehistoric population of the San Francisco Bay region resulted in the creation of a prolific archaeological record, with some of the most important sites located in Contra Costa County. The nearest recorded prehistoric site to the project is CA–CCO–249, located approximately 1 mile to the northeast and originally recorded by Nelson. This prehistoric habitation site is thought to have been partially destroyed by development.

Three previous cultural resources surveys have been conducted within the confines of the project site. The first (S–14337), conducted in 1992 by David Chavez and Associates, encompassed roughly the southwestern half of the site. No evidence of archaeological deposits or historic period resources were identified during this survey. The next survey (S–25311) was undertaken by William Self Associates, Inc., during a 2002 cultural resources evaluation for a 70–mile–long Kinder Morgan Energy Partners gas pipeline extending between Concord and Sacramento. Approximately 0.3 kilometer of the pipeline alignment crossed the northeastern portion of the project site. This survey also failed to identify any significant cultural resources. William Self

Associates conducted an additional survey (P–07–002675) on the northeastern tip of the project in 2004 for the same Kinder Morgan pipeline project. The Pacheco Slough Historic Dump, a mid–twentieth century domestic refuse dump, was evaluated, but was determined to be historically insignificant due to the relatively late date of manufacture of its constituents and a general lack of association.

Archeo–Tec's archival research identified 12 prior cultural resources surveys conducted within 0.25 miles of the project site, three of which returned positive results. The Guzzetti House (P–07–002747), recorded by Solano Archaeological Services in 2006, is a residence originally constructed in 1948. Located at 576 Palms Drive, this house lies just outside the northwestern boundary of the present project site. The Contra Costa Canal (P–07–2695), constructed between 1937 and 1948, is a concrete–lined canal that carries water from the Delta to Martinez. It is located near the southeastern boundary of the project site, running roughly parallel to I–680.

The third site, referenced as the Pacheco Site (P–07–002674), consists of an historic trash scatter and associated foundation remains recorded by William Self Associates in June 2004 during construction monitoring of the Kinder Morgan gas pipeline discussed above. It is located approximately 0.25 miles from the project site, about 1,000 feet north of the end of Blum Road. The cultural deposit was at most 20 centimeters in depth and covered an area estimated to be 160 feet north-south by 50 feet east-west. Recovered artifacts were characteristic of a rural residential deposit and appear to date from 1880 to 1930. The foundations appear to be those of an out–building, despite the residential character of the artifacts themselves.

The remainder of the recorded cultural resources surveys conducted within 0.25 miles of the project had negative results, with no cultural materials from either prehistoric or historic periods identified. The Archeo–Tec report also listed ten previous cultural resources surveys performed within 0.5 miles of the project, nine of which also had negative results. The tenth survey, conducted by David Chavez and Associates in 1992, has been recorded as California Historical Landmark No. 722. Located just over 0.25 miles south of the project site, this California Landmark is the site of the 1856 murder of Dr. John Marsh, a prominent figure in Contra Costa history, who established the Los Meganos Ranch about 30 miles outside of Martinez in 1837.

Consultation With The Native American Heritage Commission

As part of the cultural resources assessment, Archeo–Tec consulted with the staff of the Native American Heritage Commission in Sacramento to determine whether any sites deemed sacred by members of the local Native American Community are located within the confines of the project site. Following a search of the sacred lands file, Ms. Debbie Pilas–Treadway of the Native American Heritage Commission sent Archeo–Tec a letter dated May 7, 2007 indicating that the search failed to indicate the presence of Native American cultural resources in the immediate project area. Nonetheless, the letter cautioned that the "absence of specific site information in the sacred land file does not indicate the absence of cultural resources in the project area."

Archaeological Surface Reconnaissance

The project site was surveyed on May 2nd and 3rd, 2007 by two Archeo–Tec archaeologists trained in the identification of prehistoric and historic period resources. The site was divided into four arbitrary "quadrants" to facilitate pedestrian transecting of the property. Identified as Q1 through Q4 on a survey map, the findings of the survey are described by quadrant below. The steepest flanks of Vine Hill could not be surveyed due to excessive steepness. In addition, the pond and several other areas could not be surveyed due to standing water. The quadrants and unsurveyed areas are shown on **Figure 4.D-1**.

Q1 Survey

Q1 is the northwest quadrant, which was surveyed in 10–meter intervals in a northwest/southeast direction. The quad is sloped to the northeast at approximately 10 to 30 degrees. Surface visibility was poor at the time of the survey due to thick vegetation consisting of tall grass, weeds and patches of stinging nettles. The soil is hard–packed grey silty clay. Evidence of disturbance in this area was observed in the form of bulldozer push piles containing large sandstone boulders. Graded road cuts were identified parallel to the fence line and at the base of Vine Hill. No sites or cultural deposits were encountered in this quadrant.

Q2 Survey

Quadrant Q2, the northeast quadrant, was surveyed in a north/south direction. This quad is in a roughly level area and is dominated by a large pond. When surveying near the north edge of the pond, the transects were changed to an east/west direction. The vegetation around the pond is very thick and included wild mustard, horsetails and papyrus reeds. The soil is hard–packed grey silty clay. Numerous bulldozer push piles were also observed in this quad, along with a modern trash deposit in the northwest corner. Two major underground gas lines are located in the quad and graded road cuts are located parallel to the fence line. No sites or cultural deposits were encountered in this quadrant. The Pacheco Slough Historic Dump, described above in the discussion of recorded archaeological sites in the vicinity, could not be relocated in this portion of the project site.

Q3 Survey

The Q3 southeast quadrant was surveyed in a northeast/southwest direction. This quad is in a level area east of Vine Hill and is bisected by a large water channel. The vegetation is very dense along the channel but thins out to knee–high grass. Similar to the other quadrants, the surface soils consist of hard–packed grey silty clay. At the base of Vine Hill the vegetation is very sparse, with numerous roads and trails crossing the area. Bulldozer push piles were also observed and two major underground gas lines are located in the northeast portion of this quad. No archaeological sites or cultural deposits were encountered.

= Boundary of Project Site

= Area not surveyed due to steep slope

= Area not surveyed due to water

Q4 = Quad 4

N

APPROXIMATE SCALE
0 200 feet

SOURCE: Archeo-Tec, Inc.

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Figure 4.D-1
Archaeological Survey Quadrants

Q4 Survey

Q4 is the southwest quadrant, which was surveyed in 10–meter intervals in a north/south direction and by topographic methods when necessary. The quad is dominated by Vine Hill, a large rounded hill with soil similar to those on the rest of the site, covered by knee–high grasses with a small stand of oak trees on the north slope. With slopes on the shoulder of the hill ranging from 35 to 50 degrees, it was not feasible to survey these areas. A USGS survey marker dated 1946 was found upside down at the high point of the hill, next to one of the many road cuts that criss–cross the top of the hill. Some of the road cuts have exposed bedrock outcrops of sandstone. Elsewhere, the quad has been very disturbed by numerous bulldozer push piles. No archaeological sites or cultural deposits were encountered in the quadrant.

Regulatory Framework

Local Plans and Policies

Contra Costa County General Plan

The *Contra Costa County General Plan* contains goals and policies that could be applicable to the project. These goals and policies are summarized as follows:

- To identify and preserve important archaeological and historic resources within the County.
- To preserve areas with identifiable and important archaeological or historic significance.

Impacts and Mitigation Measures

Significance Criteria and Analysis Methodology

Based on Appendix G of the CEQA *Guidelines*, implementation of the project would have a significant effect on cultural resources if it would:

- Cause a substantial adverse change in the significance of an historical resource as defined in Section 15064.5;
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

Section 15064.5 refers to Public Resources Code Section 21083.2 for a definition of a unique archaeological resource, which means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- it contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;

- it has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- it is directly associated with a scientifically recognized important prehistoric or historic event;
- has yielded, or may be likely to yield, information important in prehistory or history.[2]

This section assesses potential impacts to cultural resources as a result of the implementation of the project based on data from the cultural resources evaluation performed by the archaeological consulting firm Archeo–Tec, Inc and information presented in the *General Plan.* Archeo–Tec conducted an archival records search at the Northwest Information Center at Sonoma State University to review all archaeological studies and recorded sites within a half–mile radius of the project site. Archeo–Tec also consulted with the staff of the Native American Heritage Commission in Sacramento to determine whether any portion of the project property may encroach upon any sites deemed sacred by members of the local Native American Community. Two Archeo–Tec archaeologists trained in the identification of prehistoric and historic period resources conducted a surface reconnaissance of the project site to search for signs of cultural deposits.

Impacts

Impact D.1: The site preparation and construction of the project would involve extensive subsurface disturbance that could potentially encounter and damage previously undiscovered buried historic or archaeological resources or human remains. (Significant)

Although no recorded prehistoric or historic archaeological sites were identified on the project site, some potential remains for previously undiscovered historic, archaeological or paleontological resources to exist within the confines of the project site. In addition to buried human remains, such resources could consist of Native American cooking debris or artifacts of stone, bone, or shell. Subsurface historic features or trash deposits of sufficient age, if present, could also be significant as could fossils or other paleontological features. Disturbance of buried cultural resources would be a potentially significant impact.

> **Mitigation Measure D.1a:** If any cultural artifacts are encountered during site grading or other ground–disturbing activities, all ground disturbances within 200 feet of the discovery shall be halted until a qualified archaeologist can identify and evaluate the resource(s) and, if necessary, identify mitigation measures to prevent any significant adverse effects on the resource(s). The project sponsor shall fund and implement the mitigation in accordance with Section 15064.5(c)–(f) of the CEQA *guidelines* and Public Resources Code Section 21083.
>
> **Mitigation Measure D.1b:** In the event that any human remains are encountered during site disturbance, all ground–disturbing work shall cease immediately and the County coroner must be notified immediately. If the coroner determines the remains to be Native American, the Native American Heritage Commission must be contacted within 24 hours.

[2] Public Resources Code, Section 21083.2(g).

The qualified archaeologist, in consultation with the Native American Heritage Commission, will identify subsequent measures for disposition of the remains.

Significant after Mitigation: Less than Significant.

Cumulative Impacts

Impact D.2: The project, in conjunction with past, present and reasonably foreseeable development[3], could contribute to cumulative impacts on cultural resources. (Less than Significant)

No significant archaeological resources are known to exist on the project site and archival research performed as background to this EIR did not identify any recorded archaeological sites in the project area. As noted above, while there remains some potential for buried cultural resources from historic, protohistoric, or prehistoric eras to be encountered during ground–disturbing activities, implementation of Mitigation Measure D.1 would reduce any potential impacts to such resources to less-than-significant levels. As provided in Section 15130 of the *CEQA Guidelines*, an EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus not significant. A project's contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. Because the project, with mitigation, would result in no contribution to any potential cumulative effect on cultural resources, implementation of Mitigation Measure D.1 would satisfy this criterion. Therefore, although no cumulative impacts to prehistoric cultural resources have been identified for the proposed Bayview Residential Project, the mitigation for potential project impacts to prehistoric cultural resources would also serve as mitigation for potential cumulative impacts to prehistoric cultural resources.

Mitigation: None required.

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[3] County staff identified approved, but not yet completed projects within the vicinity of the project site area. Each of the projects identified for consideration in the cumulative scenario would introduce new residential uses to the project vicinity. They include Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane) and Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard).

References – Cultural Resources

Archeo–Tec, Inc., Phase I Cultural Resources Assessment Report for the Bayview Residential Subdivision Project, Martinez, Contra Costa County, California, May 4, 2007.

Contra Costa County, *Contra Costa County General Plan 2005 – 2020*, January 18, 2005.

F. J. Hulaniski, Editor, The History of Contra Costa County, California, Elms Publishing Co., 1917.[4]

[4] This publication is available at the Contra Costa County Library located at 75 Santa Barbara Road Pleasant Hill.

E. Geology and Soils

Introduction

This section describes the geologic and seismic conditions in the project vicinity and evaluates the potential for the Bayview Residential Project to result in significant impacts related to exposing people or structures to unfavorable geologic hazards, soils and/or seismic conditions. General descriptions of geology, soils and seismic hazards rely primarily upon information gathered from maps and publications issued by the United States Geologic Survey ("USGS"), the California Geologic Survey ("CGS"), the Natural Resource Conservation Service ("NRCS") and the Association of Bay Area Governments ("ABAG"). In addition, a geotechnical report (Engeo, 2003) and related peer reviews (DMA, 2006; Engeo Inc., 2006) were used as a basis to describe site-specific conditions and identify potential issues of concern. Project elements are evaluated for their potential to alter geologic conditions, or increase risks associated with geologic and seismic hazards. If any changes are found to be significant under CEQA, such issues are discussed and appropriate mitigation measures are identified.

Setting

Regional Geology

The project area lies within the geologically complex region of California referred to as the Coast Ranges geomorphic province. The Coast Ranges province lies between the Pacific Ocean and the Great Valley and stretches from the Oregon border to the Santa Ynez Mountains near Santa Barbara. Much of the Coast Ranges province is composed of marine sedimentary deposits and volcanic rocks that form northwest-trending mountain ridges and valleys, running roughly parallel to the San Andreas Fault Zone. These older consolidated rocks are characteristically exposed in the mountains but are buried beneath younger, unconsolidated alluvial fan[1] and fluvial sediments in the valleys and lowlands. In coastal and bay margins, these younger sediments commonly interfinger with a variety of marine deposits (e.g. bay mud).

Site Geology

The Bayview Residential Project is proposed on the south and east slopes of Vine Hill, which is adjacent to the tidal marshlands of Suisun Bay. Elevations on the project site range from near sea level on its south and east sides, to a high of 283 feet at the top of Vine Hill. Natural slopes are nearly flat-lying at lower elevations and increase to over 25 percent on the flanks of Vine Hill with upland regions containing slopes that are 25 to 50 percent. Less than a mile to the east, Pacheco Creek flows north, draining into Suisun Bay about 2 miles north of the site. Thus, the property is located on the margin between older sedimentary rocks that make up Vine Hill and younger hill slope and estuarine deposits.

[1] An alluvial fan consists of unconsolidated mixtures of gravel, sand, clay and silt deposited by running water (e.g., river or stream) at the base of hills or mountain ranges.

Geologic materials at the project site vary with location and depth, with the southern and eastern portions of the property underlain by Bay Mud and artificial fill. The rest of the site, the upland portion, is underlain by consolidated Tertiary and Cretaceous sedimentary rock and associated hillslope deposits (colluvium). The following describes the location and character of these deposits from youngest to oldest:

Artificial Fill (Historic)

Existing fills have been identified at the project site, associated with the construction of the railroad tracks that border the southern portion of the project site. Fills may also be associated with the suspected quarrying activities on the eastern slope of Vine Hill. These existing fills consist of intermixed loose to dense silty and gravelly sands, silty clays and rock fragments (Engeo, 2003).

Colluvium

Colluvium are land derived deposits that originate upslope and are deposited generally at the base of slopes either through landslides or as sheetwash. The colluvial soils at the site consist of sandy and silty clays. These soils range in thickness from 3 to approximately 12 feet and are considered to be highly expansive (Engeo, 2003). These soils were also described as relatively unstable due to susceptibility to slope instability and also as having a potential to be compressible and weak (Engeo, 2003).

Bay Mud

Fine silts and clays that have accumulated below the San Francisco Bay and other tidal flats areas with waters over the last twelve thousand years are commonly referred to as Bay Muds. These deposits are generally characterized as water saturated, predominantly gray, green and blue clay and silty clay underlying marshlands and tidal mud flats. Due to fluctuations in sea levels during this time, the mud typically interfingers with the outer edges of alluvial fans and alluvial sediments, though occasionally, the mud abuts much older bedrock that forms the hills in the region.[2] The thickness of the mud ranges from 0-40 meters, with deposits thinning towards the margins of the bay.

Bay Mud underlies the low-lying south and southeastern portions of the project site and was found to be up to 30 feet thick (Engeo, 2003). Bay mud typically poses a number of engineering challenges because it is soft and highly compressible with a shallow water table. In the project area, it is encountered under thin soils, from 2 to 11 feet below the ground surface and its thickness varies from place to place (Engeo, 2003). The portion of the site proposed for development generally avoids the locations underlain by Bay Mud; however, there are some fills that are proposed for areas that may be underlain by relatively thin layers of Bay Mud (Engeo, 2006).

[2] Alluvial sediments are deposits that originate from running water (e.g., river or stream) processes at the base of hills or mountain ranges.

Vine Hill Sandstone

The Vine Hill Sandstone is a formation consisting of marine sedimentary rocks that are 55 to 65 million years in age. The bedrock consists mainly of massive, medium to coarse-grained, brown sandstone and silty shale (Graymer and Brabb, 2002). The unit is hard and massive relative to the geology that surrounds it and therefore forms the bulk of Vine Hill. Tectonic processes have folded this rock so that its layers are oriented in a northwest direction and dip toward the southwest at moderate to steep angles below horizontal (Engeo, 2003).

Great Valley Sequence

Sedimentary rocks of the Great Valley Sequence underlie the Vine Hill Sandstone at the project site and occur along the northwest base of Vine Hill. The Great Valley Sequence is a large, regional sequence of alternating layers of sandstone, siltstone and shale. The unit that has been mapped at the project site consists of grey, massive sandstone that is 65 to 100 million years in age according to the US Geological Survey (Graymer and Brabb, 2002). Its layers are oriented in a similar fashion to the Vine Hill Sandstone (Engeo, 2003). The unnamed sandstone unit is considered friable to moderately strong and can also include sandstones interbedded with siltstone and claystone (Engeo, 2003).

Soils

A soil is generally defined as a natural body consisting of horizons (layers) of mineral and/or organic constituents of variable thickness, which differ from the parent materials in their morphological, physical, chemical and mineralogical properties and their biological characteristics (Birkeland, 1999). The project site has a variety of soils whose composition and character are strongly influenced by the bedrock from which they were formed, climatic conditions, topography and their age.

The United States Department of Agriculture Natural Resources Conservation Service (“NRCS”) operates a web soil survey that provides access to soil data and information produced by the National Cooperative Soil Survey. The online soil database was queried for information on the soils in the project area (NRCS, 2008). The characteristics of the soil and their spatial extent are described below.

Omni Silty Clay

The Omni Silt Clay underlies approximately 38 percent of the project site, on flat-lying areas south and east of Vine Hill. A typical soil profile is 60 inches deep, poorly drained, with a moderately low to moderately high saturated permeability. The Omni Silty Clay usually forms on sedimentary alluvium, but has formed over the Bay Mud described earlier.

Lodo Clay Loam[3]

The Lodo Clay Loam is mapped on approximately 58 percent of the project site. The Lodo Clay Loam is further differentiated between when it is found on slopes that are between 9 and 30 percent in grade and slopes that are between 30 and 50 percent in grade. The project site contains both of these slope inclinations. The soil is characterized by being somewhat excessively drained with a very low to moderately high capacity to transmit water.

Dibble Silty Clay Loam

The Dibble Silty Clay Loam is found on slopes of 30 to 50 percent and is found on less than 2 percent of the total project site area. These soils are mapped along the southern border of the project site adjacent to the railroad tracks. The Dibble soils are characterized as well drained with a very low to moderately high capacity to transmit water.

Altamont Clay

The remaining soil unit mapped within the project site is the Altamont Clay which is shown as covering a little more than 2 percent of the site. The Altamont Clay is found on 15 to 30 percent slopes is also considered to be well drained with a very low to moderately high capacity to transmit water. However, the Altamont Clay generally has a better (moderate) available capacity to retain water.

Seismicity

The project lies within a region of California that contains many active and potentially active faults and is considered an area of high seismic activity (**Figure 4.E-1**).[4] The U.S. Geological Survey ("USGS") Working Group on California Earthquake Probabilities evaluated the probability of one or more earthquakes of Richter magnitude 6.7 or higher occurring in the San Francisco Bay Area within the next 30 years. The result of the evaluation indicated a 63 percent likelihood that such an earthquake event will occur in the Bay Area between 2008 and 2038 (USGS, 2008).

Richter magnitude is a measure of the size of an earthquake as recorded by a seismograph, a standard instrument that records groundshaking at the location of the instrument. The reported Richter magnitude for an earthquake represents the highest amplitude measured by the seismograph at a distance of 100 kilometers from the epicenter. Richter magnitudes vary logarithmically with each whole number step representing a ten fold increase in the amplitude of the recorded seismic waves. Earthquake magnitudes are also measured by their Moment

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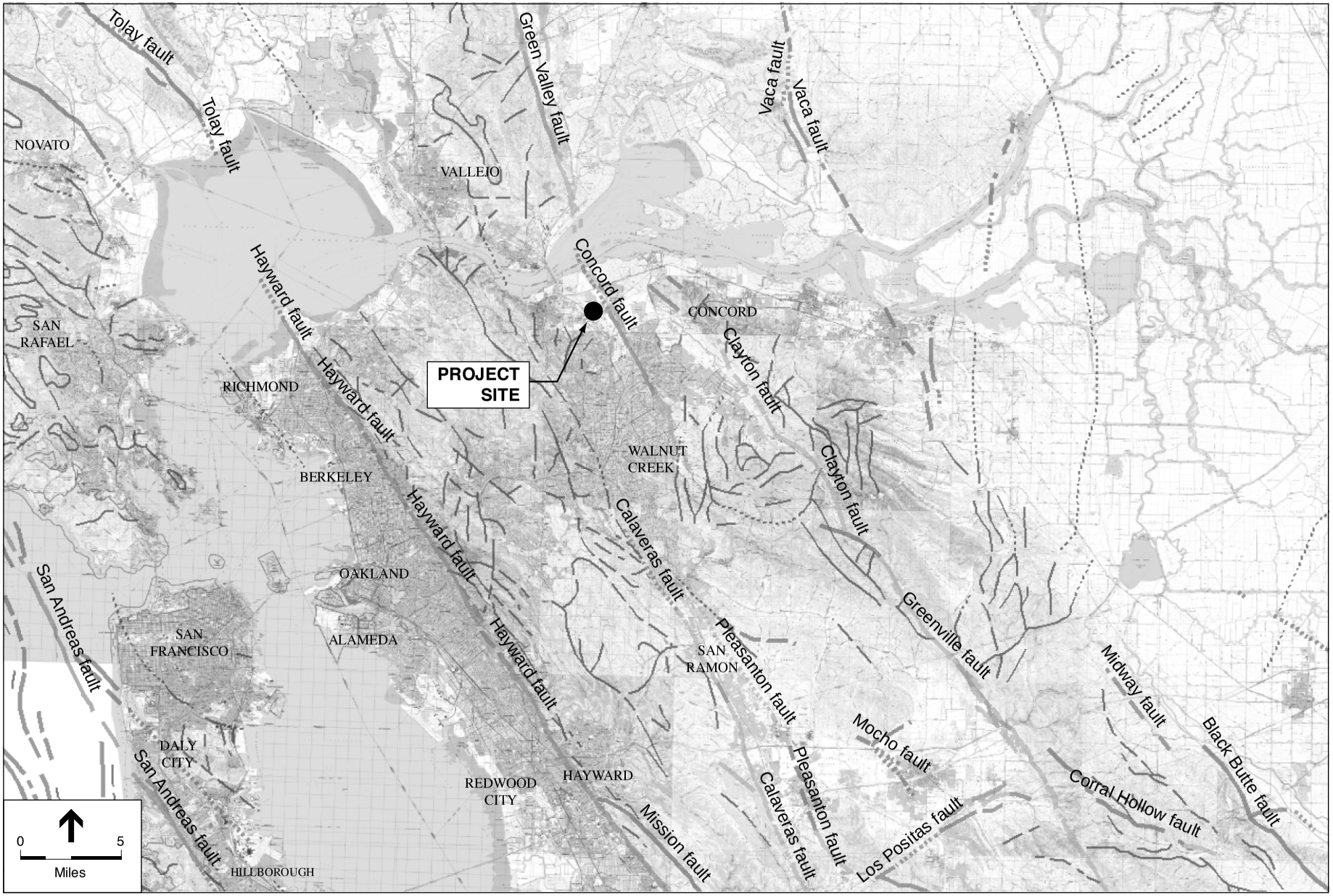
3 A loam is a soil that is made up of approximately equal quantities of sand, silt and clay. Often, the term is qualified to indicate which material occurs in greater proportion. For example, a clay loam has a greater proportion of clay relative to sand and silt.

4 An "active" fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 11,000 years). A "potentially active" fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not, of course, mean that faults lacking evidence of surface displacement are necessarily inactive. "Sufficiently active" is also used to describe a fault if there is some evidence that Holocene displacement occurred on one or more of its segments or branches (Hart, 1997).



SOURCE: ESA

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Figure 4.E-1
Regional Fault Map

Magnitude ("Mw") which is related to the physical characteristics of a fault including the rigidity of the rock, the size of fault rupture and movement or displacement across a fault (CGS, 2002).

Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. For this reason, earthquake intensities are also measured in terms of their observed effects at a given locality. The Modified Mercalli ("MM") intensity scale (**Table 4.E-2**) is commonly used to measure earthquake damage due to ground shaking. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total) and intensities ranging from IV to X could cause moderate to significant structural damage.[5] The intensities of an earthquake will vary over the region of a fault and generally decrease with distance from the epicenter of the earthquake.

Regional Faults

The San Andreas, Hayward and Calaveras Faults pose the greatest threat of significant damage in the Bay Area according to the USGS Working Group (USGS, 2003a). These three faults exhibit strike-slip orientation and have experienced movement within the last 150 years.[6] Other principal faults capable of producing significant ground shaking in the Bay Area are listed on **Table 4.E-1** and include the Concord–Green Valley, Marsh Creek–Greenville and Rodgers Creek Faults.

San Andreas Fault

The San Andreas Fault Zone is a major structural feature that forms at the boundary between the North American and Pacific tectonic plates, extending from the Salton Sea in Southern California near the border with Mexico to north of Point Arena, where the fault trace extends out into the Pacific Ocean. The main trace of the San Andreas fault through the Bay Area trends northwest through the Santa Cruz Mountains and the eastern side of the San Francisco Peninsula. As the principal strike-slip boundary between the Pacific plate to the west and the North American plate to the east, the San Andreas is often a highly visible topographic feature, such as between Pacifica and San Mateo, where Crystal Springs Reservoir and San Andreas Lake clearly mark the rupture zone. Near San Francisco, the San Andreas fault trace is located immediately off-shore near Daly City and continues northwest through the Pacific Ocean approximately 6 miles due west of the Golden Gate Bridge.

In the San Francisco Bay Area, the San Andreas Fault Zone was the source of the two major seismic events in recent history that affected the San Francisco Bay region. The 1906 San Francisco earthquake was estimated at Mw 7.9 and resulted in approximately 290 miles of surface fault rupture, the longest of any known continental strike slip fault. Horizontal displacement along the fault approached 17 feet near the epicenter. The more recent 1989 Loma Prieta earthquake, with a magnitude of Mw 6.9, resulted in widespread damage throughout the Bay Area.

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5 The damage level represents the estimated overall level of damage that will occur for various MM intensity levels. The damage, however, will not be uniform. Not all buildings perform identically in an earthquake. The age, material, type, method of construction, size and shape of a building all affect its performance.

6 A strike-slip fault is a fault on which movement is parallel to the fault's strike or lateral expression at the surface (Bates and Jackson, 1984).

TABLE 4.E-1
ACTIVE FAULTS IN THE PROJECT SITE VICINITY

Fault	Distance and Direction from Project	Recency of Movement	Fault Classification[a]	Historical Seismicity[b]	Maximum Moment Magnitude Earthquake (Mw)[c]
Concord–Green Valley	1 miles East	Historic (1955)	Active	Historic active creep	6.7
Marsh Creek–Greenville	10 miles Southeast	Historic (1980 rupture)	Active	M 5.6 1980	6.9
Hayward	11 miles West	Historic (1868 rupture)	Active	M 6.8, 1868 Many <M 4.5	7.1
Calaveras	18 miles South	Historic (1861 1911, 1984)	Active	M 5.6–M 6.4, 1861 M 6.2, 1911, 1984	6.8
Rodgers Creek	20 miles North	Historic	Active	M 6.7, 1898 M 5.6, 5.7, 1969	7.0
San Andreas	30 miles Southwest	Historic (1906; 1989 ruptures)	Active	M 7.1, 1989 M 8.25, 1906 M 7.0, 1838 Many <M 6	7.9

[a] See footnote 2.
[b] Richter magnitude ("M") and year for recent and/or large events. The Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave.
[c] Moment Magnitude ("Mw") is related to the physical size of a fault rupture and movement across a fault. Moment magnitude provides a physically meaningful measure of the size of a faulting event (CGS, 2002). The Maximum Moment Magnitude Earthquake, derived from the joint CGS/USGS Probabilistic Seismic Hazard Assessment for the State of California, 1996 (Peterson, 1996).

SOURCES: Hart, 1997; Jennings, 1994; Peterson, 1996; USGS, 2003a.

Hayward Fault

The Hayward Fault Zone is the southern extension of a fracture zone that includes the Rodgers Creek Fault (north of San Pablo Bay), the Healdsburg fault (Sonoma County) and the Maacama fault (Mendocino County). The Hayward fault trends to the northwest within the East Bay, extending from San Pablo Bay in Richmond, 60 miles south to San Jose. The Hayward fault in San Jose converges with the Calaveras fault, a similar type fault that extends north to Suisun Bay. The Hayward fault is designated by the Alquist-Priolo Earthquake Fault Zoning Act as an active fault.

Historically, the Hayward fault generated one sizable earthquake in the 1800s.[7] In 1868, a Richter magnitude 7 earthquake on the southern segment of the Hayward Fault ruptured the ground for a distance of about 30 miles. Recent analysis of geodetic data indicates surface deformation may have extended as far north as Berkeley. Lateral ground surface displacement during these events was at least 3 feet.

[7] Prior to the early 1990s, it was thought that a Richter magnitude 7 earthquake occurred on the northern section of the Hayward Fault in 1836. However, a study of historical documents by the California Geological Survey concluded that the 1836 earthquake was not on the Hayward Fault (Bryant, 2000).

TABLE 4.E-2
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Acceleration (% g[a])
I	Not felt except by a very few persons under especially favorable circumstances.	< 0. 17 g
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	0.17-1.4 g
III	Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly, vibration similar to a passing truck. Duration estimated.	0.17-1.4 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	1.4–3.9g
V	Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulum clocks may stop.	3.5 – 9.2 g
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; and fallen plaster or damaged chimneys. Damage slight.	9.2 – 18 g
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	18 – 34 g
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	34 – 65 g
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	65 – 124 g
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 124 g
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

[a] g (gravity) = 980 centimeters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCE: ABAG, 2003; CGS, 2009

A characteristic feature of the Hayward fault is its well-expressed and relatively consistent fault creep. Although large earthquakes on the Hayward fault have been rare since 1868, slow fault creep has continued to occur and has caused measurable offset. Fault creep on the East Bay segment of the Hayward fault is estimated at 9 millimeters per year ("mm/yr") (Peterson, et al., 1996). However, a large earthquake could occur on the Hayward fault with an estimated moment magnitude ("Mw") of about 7.1 (Table 4.E-2). The USGS Working Group on California Earthquake Probabilities includes the Hayward–Rodgers Creek Fault Systems in the list of those faults that have the highest probability of generating earthquakes of magnitude ("M") 6.7 or greater in the Bay Area (USGS, 2003b).

Calaveras Fault

The Calaveras fault is a major right-lateral strike-slip fault that has been active during the last 11,000 years. The Calaveras Fault is located in the eastern San Francisco Bay region and generally trends along the eastern side of the East Bay Hills, west of San Ramon Valley and extends into the western Diablo Range and eventually joins the San Andreas Fault Zone south of Hollister. The northern extent of the fault zone is somewhat conjectural and could be linked with the Concord Fault.

The fault separates rocks of different ages, with older rocks west of the fault and younger sedimentary rocks to the east. The location of the main, active fault trace is defined by youthful geomorphic features (linear scarps and troughs, right-laterally deflected drainage, sag ponds) and local groundwater barriers. The Calaveras fault is designated as an Alquist-Priolo Earthquake Hazard Zone (see discussion on this zone designation below). There is a distinct change in slip rate and fault behavior north and south of the vicinity of Calaveras Reservoir. North of Calaveras Reservoir, the fault is characterized by a relatively low slip rate of 5-6 mm/yr and sparse seismicity. South of Calaveras Reservoir, the fault zone is characterized by a higher rate of surface fault creep that has been evidenced in historic times. The Calaveras Fault has been the source of numerous moderate magnitude earthquakes and the probability of a large earthquake (greater than M6.7) is much lower than on the San Andreas or Hayward Faults (USGS, 2003b). However, this fault is considered capable of generating earthquakes with upper bound magnitudes ranging from Mw 6.6 to Mw 6.8.

Concord-Green Valley Fault

The Concord-Green Valley Fault extends from Walnut Creek north to Wooden Valley (east of Napa Valley). Historical record indicates that no large earthquakes have occurred on the Concord or Green Valley Faults (USGS, 2003a). However, a moderate earthquake of magnitude M5.4 occurred on the Concord Fault segment in 1955. The Concord and Green Valley Faults exhibit active fault creep and are considered to have a small (4 percent) probability of causing a significant (greater than M6.7 earthquake according to the USGS).

Rodgers Creek Fault

The Rodgers Creek Fault Zone ("RCFZ") is the southern segment of a fracture zone that includes the Rodgers Creek fault (north of San Pablo Bay) and the Healdsburg fault (northern Sonoma

County). The most recent significant earthquakes on the RCFZ both occurred on October 1, 1969. On this date, two earthquakes of Richter magnitude 5.6 and 5.7 occurred within an 83-minute period. Buildings in Santa Rosa sustained serious damage during these quakes. Prior to these events, the last major earthquake (estimated Richter magnitude 6.7) was generated in 1898 with an epicenter near Mare Island at the north margin of San Pablo Bay. The USGS estimates the probability of a large earthquake (moment magnitude 6.7 or greater) on the Hayward-Rodgers Creek Fault during the period 2003 to 2032 to be 27 percent, the highest probability for all San Francisco Bay fault zones (USGS, 2003b). CGS and ABAG estimate the RCFZ is capable of generating a maximum moment magnitude 7.0 earthquake.

Greenville Fault

The Greenville Fault, also known as the Marsh Creek-Greenville fault, extends along the base of the Altamont Hills, which form the eastern margin of the Livermore Valley. The fault is recognized as a major structural feature and has demonstrated activity in the last 11,000 years. A magnitude 5.6 earthquake on the Greenville fault in 1980 produced a small amount of surface rupture (approximately 3 centimeters) on the fault near Vasco Road.

Seismic Hazards

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude, sense and nature of fault rupture can vary for different faults or even along different strands of the same fault. Ground rupture is considered more likely along active faults, which are referenced in Table 4.E-1.

The site is not within an Alquist-Priolo Fault Rupture Hazard Zone, as designated through the Alquist-Priolo Earthquake Fault Zoning Act and no mapped active faults are known to pass through the immediate project region. Therefore, the risk of ground rupture at the site is very low.

Ground Shaking

Strong ground shaking from a major earthquake could affect the project site during the next 30 years. Earthquakes on the active faults (listed in Table 4.E-1) are expected to produce a range of ground shaking intensities at the project site. Ground shaking may affect areas hundreds of miles distant from the earthquake's epicenter. Historic earthquakes have caused strong ground shaking and damage in the San Francisco Bay Area, the most recent being the M 6.9 Loma Prieta earthquake in October 1989. The epicenter was more than 60 miles south of the project site, but this earthquake nevertheless caused strong ground shaking for about 20 seconds and resulted in varying degrees of structural damage throughout the Bay Area.

The 1906 San Francisco earthquake, with an estimated moment magnitude of 7.9, produced moderate (VI) shaking intensities in the project area (ABAG, 2008a). The 1989 Loma Prieta earthquake, with an Mw of 6.9, produced light (V) shaking intensities in the project area (ABAG, 2008b).

The common way to describe ground motion during an earthquake is with the motion parameters of acceleration and velocity in addition to the duration of the shaking. A common measure of ground motion is the peak ground acceleration ("PGA"). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity ("g"), which is approximately 980 centimeters per second squared. In terms of automobile accelerations, one "g" of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds. For comparison purposes, the maximum peak acceleration value recorded during the Loma Prieta earthquake was in the vicinity of the epicenter, near Santa Cruz, at 0.64 g. The highest value measured in the East Bay was 0.29 g, recorded at the Oakland Wharf near the Naval Supply Center where the soils are artificial fill overlying Bay Mud. The lowest values recorded were 0.06 g in the bedrock on Yerba Buena Island. However, an earthquake on the nearby Concord-Green Valley fault, for example, could produce more severe ground shaking at the site than was observed during the Loma Prieta earthquake. Probabilistic seismic hazard maps indicate that peak ground acceleration in the project region could reach or exceed 0.5g (CGS, 2008).[8] The potential hazards related to ground shaking are discussed further in the Impacts and Mitigations section of this chapter.

Liquefaction

Liquefaction is a transformation of soil from a solid to a liquefied state during which saturated soil temporarily loses strength resulting from the buildup of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt and some low-plasticity clay deposits. Four kinds of ground failure commonly result from liquefaction: lateral spread, flow failure, ground oscillation and loss of bearing strength. Liquefaction and associated failures could damage foundations, roads, underground cables and pipelines and disrupt utility service.

In addition, liquefaction can occur in unconsolidated or artificial fill sediments and other reclaimed areas along the margin of San Francisco Bay. The depth to groundwater influences the potential for liquefaction, in that sediments need to be saturated to have a potential for liquefaction.

Hazard maps produced by the Association of Bay Area Governments ("ABAG") depict liquefaction and lateral spreading hazards for the entire Bay Area in the event of a significant

8 A probabilistic seismic hazard map shows the predicted level of hazard from earthquakes that seismologists and geologist believe could occur. The map's analysis takes into consideration uncertainties in the size and location of earthquakes and the resulting ground motions that can affect a particular site. The maps are typically expressed in terms of probability of exceeding a certain ground motion. These maps depict a 10% probability of being exceeded in 50 years. There is a 90% chance that these ground motions will NOT be exceeded. This probability level allows engineers to design buildings for larger ground motions than seismologists think will occur during a 50-year interval, making buildings safer than if they were only designed for the ground motions that are expected to occur in the 50 years. Seismic shaking maps are prepared using consensus information on historical earthquakes and faults. These levels of ground shaking are used primarily for formulating building codes and for designing buildings. (CGS, 2005a)

seismic event.[9] According to these maps, the upland portion of the project site is in an area expected to have a very low potential to experience liquefaction for the majority of the project site. However the portion of the site where Bay Mud has been mapped, in the low lying areas of the southeastern portion of the site, has been mapped by ABAG as having a high liquefaction potential (ABAG, 2008c). According to the geotechnical report prepared for the project site, the clay content observed in the soil samples taken from this area indicate a low potential for liquefaction within the portion of the site proposed for residential development (Engeo, 2003).

Earthquake-Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (particularly loose, uncompacted and variable sandy sediments above the water table) due to the rearrangement of soil particles during prolonged ground shaking. Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different amounts). Undocumented artificial fill would be the most susceptible to this type of settlement, if it were present. However, the project would include significant earthwork and create engineered fill (up to 59 feet thick) for all areas that would meet or exceed standards intended to prevent significant earthquake-induced settlement.

Geologic Hazards

Expansive Soils

Expansive soils possess a “shrink-swell” behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may occur over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. The clayey soils found on the project site were found to have a moderate to high expansion potential (Engeo, 2003). The hazard can be minimized through appropriate grading and foundation design measures consistent with standard geotechnical engineering practices.

Soil Erosion

Erosion is the wearing away of soil and rock by processes such as mechanical or chemical weathering, mass wasting and the action of waves, wind and underground water. Excessive soil erosion can eventually lead to damage of building foundations and roadways. At the project site, areas that are most susceptible to erosion are any disturbed soils located on steeper terrain. Typically, the soil erosion potential is reduced once the soil is graded and vegetated, covered with concrete, structures, asphalt, or slope protection. Soil erosion is a potential issue at the site and is discussed in the Impacts and Mitigations section below.

[9] Lateral spreading is a ground failure associated with liquefaction and generally results from predominantly horizontal displacement of materials toward relatively unsupported free slope faces.

Settlement

Settlement can occur from immediate settlement, consolidation, shrinkage of expansive soil and liquefaction (discussed below). Immediate settlement occurs when a load from a structure or placement of new fill material is applied, causing distortion in the underlying materials. This settlement occurs quickly and is typically complete after placement of the final load. Consolidation settlement occurs in saturated clay from the volume change caused by squeezing out water from the pore spaces. Consolidation occurs over a period of time and is followed by secondary compression, which is a continued change in void ratio under the continued application of the load.

Soils tend to settle at different rates and by varying amounts depending on the load weight or changes in properties over an area, which is referred to as differential settlement. Some of the low lying areas of the project site are underlain by compressible Bay Mud. When placed under new loads from either structures or placement of new fill, Bay Muds can settle in the short term, referred to as primary settlement, or over a long duration, referred to as secondary settlement. However, geotechnical engineering methods can effectively reduce the damaging effects of settlement either through surcharging the soils (placing temporary fills on the Bay Mud prior to development), drainage design, or use of deep foundation systems.

Landslides and Slope Failure

Ground failure is dependent on the slope and geology as well as the amount of rainfall, excavation, or seismic activities. A slope failure is a mass of rock, soil and debris displaced down slope by sliding, flowing, or falling. Steep slopes and downslope creep of surface materials characterize landslide-susceptible areas. Debris flows consist of a loose mass of rocks and other granular material that, if present on a steep slope and saturated, can move down slope.

The rate of rock and soil movements can vary from a slow creep over many years to sudden mass movements. Landslides occur throughout the state of California but the density of incidents increases in zones of active faulting. As reported in the geotechnical report, a previously mapped landslide from a 1975 study was shown on the northeast-facing slope of the project site was evaluated as part of the investigation. This study was based on geologic interpretation and aerial photography from the 1960s and used to primarily identify areas where slope failure may be a potential hazard (DMA, 2006a). Following exploratory test pits and borings, the geotechnical investigation found no evidence supporting the existence of this landslide (Engeo, 2003).

Regulatory Framework

California Building Code

The California Building Code (“CBC”) has been codified in the California Code of Regulations (“CCR”) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety and

general welfare through structural strength, means of egress facilities and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location and maintenance of all building and structures within its jurisdiction. The 2007 CBC is based on the 2006 International Building Code ("IBC") published by the International Code Conference. In addition, the CBC contains necessary California amendments which are based on the American Society of Civil Engineers ("ASCE") Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications and various seismic coefficients which are used to determine a Seismic Design Category ("SDC") for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault).

Local Plans and Policies

Contra Costa County Code – Title 7 Building Code

Division 716 of the Contra Costa County Code provides the County Grading Ordinance which sets forth regulations for the control of excavating, grading, earthwork construction, including fills or embankments and related work. The following requirements are found within Chapter 716-8 of the code:

- Cuts shall not be steeper in slope than one vertical to two horizontal unless the applicant furnishes a soil engineering or an engineering geology report, or both, certifying that the site has been investigated and giving an opinion that a cut at a steeper slope will be stable and not create a hazard to public or private property. The county building official may require the excavation to be made with a cut face flatter in slope than one vertical to two horizontal if he finds it necessary for stability and safety.

- Cut slopes exceeding forty feet in vertical height shall have drainage terraces not less than five feet (1.524 meters) in width, measured from the outer edge of the terrace to the invert of the drain, at vertical intervals not exceeding thirty feet (9.144 meters) except that where only one such terrace is required it shall be located at mid-height. For cut slopes exceeding one hundred feet (30.48 meters) in vertical height, the drainage terrace near mid-height shall be not less than twelve feet (3.657 meters) in width. Design and construction of drainage terraces shall conform to the requirements of Sections 716-8.602 -- 716-8.614.

- Cut slopes shall be rounded off at the top and toe to blend and conform to existing terrain.

- Variations from the regulations in Sections 716-8.202 -- 716-8.206 may be allowed by the county building official if they will provide equivalent safety, stability, and protection against erosion, as recommended by a soil engineer or engineering geologist.

- Where fill is to be placed above the top of an existing or proposed cut or natural slope steeper than one vertical to three horizontal, the toe of the fill shall be set back from the top edge of the slope a minimum distance of six feet, (1.829 meters) measured horizontally or such other distance as may be specifically recommended by a soil engineer or engineering geologist and approved by the county building official. Fills shall not toe out on slopes steeper than one vertical to three horizontal.

- Fill slopes shall be tapered into the existing terrain at the toe and shall be rounded off at the top.

- Variations from the regulations in Sections 716-8.402 -- 716-8.422 may be allowed by the county building official if they will provide equivalent safety, stability, and protection against erosion, as recommended by a soil engineer or engineering geologist.

Contra Costa County General Plan

Contra Costa County has established goals, policies and programs in regards to geologic hazards within the *Contra Costa County General Plan* ("*General Plan*"). These are outlined in the Conservation and Safety Element sections of the *General Plan*. These goals and policies are summarized as follows:

- Include appropriate recommendations for seismic strengthening and detailing to meet the latest adopted seismic design criteria.

- Apply policies regarding liquefaction to other ground failures which might result from ground shaking, but which are less well-defined.

- Give slope stability careful scrutiny in design and in the adoption of conditions of approval and required mitigation measures.

- Subject soil and geological reports to the review and approval of the County Planning Geologist.

- Establish and enforce erosion control procedures for all construction and grading projects.

Certain *General Plan* policies are especially relevant; including liquefaction, slope stability and erosion control. These are summarized as follows:

Liquefaction Policies

Policy 10-18: This General Plan shall discourage urban or suburban development in areas susceptible to high liquefaction dangers and where appropriate subject to the policies in 10-20 below, unless satisfactory mitigation measures can be provided, while recognizing that there are low intensity uses such as water related recreation and agricultural uses that are appropriate in such areas. (For the Bethel Island Area, the adopted specific plan policies will apply.)

Policy 10-20: Any structures permitted in areas of high liquefaction danger shall be sited, designed and constructed to minimize the dangers from damage due to earthquake-induced liquefaction.

Policy 10-21: Approvals to allow the construction of public and private development projects in areas of high liquefaction potential shall be contingent on geologic and engineering studies which define and delineate potentially hazardous geologic and/or soils conditions, recommend means of mitigating these adverse conditions; and on proper implementation of the mitigation measures.

Ground Failure and Landslide Hazard Policies

Policy 10-22: Slope stability shall be a primary consideration in the ability of land to be developed or designated for urban uses.

Policy 10-23: Slope stability shall be given careful scrutiny in the design of developments and structures and in the adoption of conditions of approval and required mitigation measures.

Policy 10-24: Proposed extensions of urban or suburban land uses into areas characterized by slopes over 15 percent and/or generally unstable land shall be evaluated with regard to the safety hazard prior to the issuance of any discretionary approvals. Development on very steep open hillsides and significant ridgelines throughout the County shall be restricted and hillsides with a grade of 26 percent or greater shall be protected through implementing zoning measures and other appropriate actions.

Policy 10-26: Approvals of public and private development projects in areas subject to slope failures shall be contingent on geologic and engineering studies which define and delineate potentially hazardous conditions and recommend adequate mitigation.

Policy 10-27: Soil and geological reports shall be subject to the review and approval of the County Planning Geologist.

Policy 10-28: Generally, residential density shall decrease as slope increases, especially above a 15 percent slope.

Policy 10-29: Significant very steep hillsides shall be considered unsuitable for types of development which require extensive grading or other land disturbance.

Policy 10-30: Development shall be precluded in areas when landslides cannot be adequately repaired.

Policy 10-31: Subdivisions approved on hillsides which include individual lots to be resold at a later time shall be large enough to provide flexibility in finding a stable buildable site and driveway location.

Policy 10-32: The County shall not accept dedication of public roads in unstable hillside areas, or allow construction of private roads there which would require an excessive degree of maintenance and repair costs.

Impacts and Mitigation Measures

Significance Criteria and Analysis Methodology

Based on Appendix G of the CEQA *Guidelines*, implementation of the project would have a significant effect on geology or soils if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map10 issued by the State Geologist for the area or based on other substantial evidence of a known fault;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; or
  - Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- Be located on expansive soil, as defined in Table 18 1 B of the Uniform Building Code (1994), creating substantial risks to life or property; or
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

The following section identifies specific impacts pertaining to geology, soils and seismicity and assesses the change from the existing conditions. The analysis of the project impacts is based on the significance criteria listed above. Certain significance criteria do not apply or do not represent a significant impact to the project and are not discussed further: the project site is not located within an Alquist Priolo Fault Zone and has a very low potential for fault rupture; the presence of liquefiable soils was not found on the project site during the geotechnical investigation; and the project does not include the construction of any septic tanks or other alternative wastewater disposal systems.

[10] Per CEQA *Guidelines*, a known earthquake fault is one that has been delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.

Impacts

Impact E.1: Development at the project site could subject people and property to slope instability hazards, including landslides, debris flows and rockfalls caused by seismic or nonseismic mechanisms. (Significant)

The project site includes a prominent hill with relatively steep slopes, composed of bedrock in varying stages of weathering. Bedrock contacts, fractures and shear zones provide areas of weakened rock that can become dislodged and then fall or roll towards the lower areas. As mentioned above in the Setting section, landslides or slope failures can occur slowly over time or as sudden releases of debris. Slope failures occur as a function of slope and type of materials and may be triggered by events such as heavy precipitation, human activities such as excavation, changes in groundwater levels, or seismic activity. The existing slopes on the hill include inclines that are over 25 percent (or 4:1 horizontal:vertical) and approach 50 percent (or 2:1). The grading plan proposes to reconfigure the existing slopes by creating gentler slopes through excavation of materials in the upper regions and filling in the lower regions of the site. Fills that range from a few feet to as much as 59 feet thick would be placed on the eastern half of the project site whereas the cut slopes on the western half would range up to 135 feet in height. The grading plan proposes to create slopes that range up to 2:1 in the south east portion of the site and 3:1 in other areas. In addition to engineered slopes, the grading plan calls for construction of retaining walls, debris benches with drainage control features and revegetation for the purposes of increasing slope stability. If unstable slopes in weak material remain during and after development, landsliding, rockfalls and debris flows could occur over time, potentially exposing people and property to injury and damage.

The analysis of slope stability for the project was initially performed by Engeo in their geotechnical investigation in 2003. In that report, Engeo included recommendations for constructed slopes, which were not to exceed 2:1 slopes for slopes that are less than 15 feet high and 3:1 slopes for slopes greater than 15 feet high (Engeo, 2003). However, it is noted that slopes greater than 2:1 were still possible provided they were reinforced (Engeo, 2003). A preliminary grading plan was prepared by Isakson and Associates and subsequently reviewed by Engeo. In general the proposed grading plan was in accordance with Engeo's recommendations with some areas where recommended slope gradients were exceeded (i.e. slopes greater than 15 feet high that exceeded 3:1). Therefore, in a subsequent letter, Engeo prepared supplemental recommendations to reconcile that some of the proposed slopes would be steeper than originally recommended. Engeo concluded that with incorporation of drainage terraces (8 feet wide spaced at 30 foot intervals with the lowest bench being 20 feet wide) and remedial grading (slope stabilization techniques such as geogrid reinforcement), the proposed gradients were acceptable (Engeo, 2006). In addition, subsequent to the preparation of these geotechnical evaluations, the proposed grading plan for the project has been revised in drawings prepared by Isakson and Associates which includes no slopes that exceed 2:1 (Isakson, 2008).

Both Engeo documents were peer reviewed by Darwin Myers Associates ("DMA"), the consulting geologist to the County, for their completeness, consistency with *General Plan* policies and technical adequacy. In general, DMA found the Engeo reports were based on an

adequate analysis of subsurface conditions that included appropriate laboratory testing and engineering analysis. DMA determined that the proposed grading may conflict with *General Plan* policies and zoning which is discussed further in Section 4.H, *Land use and Planning*, of this document. Otherwise, the majority of slope stability hazards would be reduced by the grading design envisioned under the proposed grading plan with implementation of the recommendations made by Engeo. However, DMA concluded that Parcel A (the hilltop portion of the site proposed to remain undeveloped) should be limited to 3:1 slopes with a debris bench at the north and east boundaries (DMA, 2006b). In addition, DMA recommended relocating Palms Drive to abut Parcel A (excluding lots 43-57), contour rounding the edges of graded slopes on Parcel A and returning to the original recommendations made by Engeo that limit engineered slopes with gradients of 2:1 to those up to 15 feet high and 3:1 for anything higher (DMA, 2006b). With the grading plan as proposed, DMA recommended not developing lot nos. 61-65 based on the proposed fill depths overlying the existing slopes in that location (DMA, 2006b). Incorporating these considerations, which would substantially alter the project and cause it to be inconsistent with the project's objectives (see Chapter 3, *Project Description*), are therefore further explored as an alternative described in Chapter 5, *Alternatives.*

The project would reduce the potential for debris flows and rockfalls by engineered cut-and-fill slopes with additional stabilizing features including use of retaining walls, debris benches and drainage controls. The County Grading Ordinance includes maximum slope requirements for cut slopes as well as fill slopes along with drainage terrace requirements as noted above in the Local Plans and Policies section. In addition, the ordinance allows for variations to occur provided they are accompanied by recommendations from a soils engineer or engineering geologist. In this case, Engeo has provided recommendations to ensure stability of the proposed slopes as made by their soils engineers and engineering geologists. Ultimately, the county building official reviewing the grading permit will determine if the final proposed grading plan has met the county grading ordinance and adequately provides for the safety and stability of future residents. Therefore, with implementation of the mitigation measure below the potential for slope stability to create safety hazards for the public and residents of the project would be reduced to a less-than-significant level.

> **Mitigation Measure E.1:** The applicant shall include the recommendations made in both Engeo's *Geotechnical Exploration Bay View Subdivision* report dated August 15, 2003 and the Geotechnical *Review of Rough Grading Plan and Supplemental Recommendations* by Engeo dated June 27, 2006 as part of the proposed project. These recommendations include oversight of grading operations which shall be conducted by a California Certified Engineering Geologist or Registered Professional Geotechnical Engineer. The final grading plans shall be in accordance with the *Contra Costa County Grading Ordinance (Title 7 Division 716)* and reviewed and approved of by the Contra Costa Department of Conservation and Development prior to the commencement of project construction. Upon identification of suspect slopes or areas that are observed to be unstable during grading, the engineer or geologist shall oversee the removal of the suspected material and reconstruction of the slope as a buttress fill slope with engineered slope stabilization features such as geogrid reinforcement. Final inspection of excavated slopes and graded slopes shall be completed by a registered civil or geotechnical engineer or certified engineering geologist with knowledge of the project conditions.

Significance after Mitigation: Less than Significant.

Impact E.2: Project development at the proposed site would be subjected to significant ground shaking from a seismic event on one of the regional active faults causing personal injury and significant damage to structures. (Significant)

The project site would likely experience at least one major earthquake (Richter magnitude (M) 6.7 or higher) within the next 30 years. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the moment magnitude and the duration of shaking. A characteristic earthquake on the Concord-Green Valley fault with an estimated M 6.7 could produce very strong (VIII) shaking in the project area (ABAG, 2008d). Probabilistic seismic hazard maps indicate that peak ground acceleration in the project region could reach or exceed 0.5g (CGS, 2008). [11] Based on the MMI scale and equivalent peak ground accelerations, an earthquake of this intensity could cause considerable structural damage in poorly designed structures and slight damage in well-designed structures. For comparison purposes, the maximum peak acceleration value recorded during the Loma Prieta earthquake was in the vicinity of the epicenter, near Santa Cruz, at 0.64 g. The highest value measured in the East Bay was 0.29 g, recorded at the Oakland Wharf near the Naval Supply Center where the soils are artificial fill overlying Bay Mud.

A preliminary Geotechnical Investigation has been completed for the project site. This investigation has provided an analysis of site conditions based on collecting subsurface soil samples and has concluded that the project is feasible from a geotechnical standpoint provided that recommendations made in the report are included into the design (Engeo, 2003). The geotechnical review of the proposed grading plans was conducted separately and contained supplemental recommendations to be implemented during construction (Engeo, 2006). Both of these documents were peer reviewed by an independent engineering geologist and found to contain prudent recommendations for the development of the site as proposed with some exceptions. The exceptions relate to the proposed grading plan and recommended engineered slopes which are discussed above in Impact E.1, and relate to slope stability.

In accordance with applicable *General Plan* policies regarding mitigation of seismic and geologic hazards, the project applicant shall conduct a design-level geotechnical investigation at the project site. Among other elements, this investigation shall determine final design parameters for retaining walls, residential foundations, street pavements and foundation slabs. A licensed geotechnical engineer shall prepare recommendations applicable to foundation design, earthwork and site preparation prior to or during the project design phase and the project applicant shall incorporate these recommendations into project designs.

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[11] See footnote 7.

Predicting seismic events is not possible, nor is providing mitigation that can entirely reduce the potential for injury and damage that can occur during a seismic event. However, using accepted geotechnical evaluation techniques and appropriate engineering practices, potential injury and damage risk can be diminished, thereby exposing fewer people and less property to the effects of a major damaging earthquake. Therefore, with incorporation of the mitigation measure below, the potential ground shaking hazards would be minimized to a less-than-significant level.

> **Mitigation Measure E.2:** A site-specific, design level geotechnical investigation shall be required as part of this project. The investigation shall include an analysis of expected ground motions at the site from known active faults in accordance with the 2007 California Building Code ("Title 24") which requires that all designs accommodate ground accelerations expected from known active faults. In addition, the investigation shall review improvement and grading plans and update geotechnical design recommendations for the walls, foundations, foundation slabs and surrounding related improvements (utilities, roadways, parking lots and sidewalks). The report shall be subject to technical review and approval by a registered geotechnical engineer or engineering geologist. All recommendations by the project engineer and geotechnical engineer shall be incorporated into the final design. Recommendations that are applicable to foundation design, earthwork and site preparation that were prepared prior to or during the project design phase, shall be incorporated in the project. The final seismic considerations for the site shall be submitted to and approved of by the Contra Costa Department of Conservation and Development prior to the commencement of the project.

Significance after Mitigation: Less than Significant.

Impact E.3: With proposed fill placements reaching up to 59 feet thick, the project site would be susceptible to settlement either from static forces or earthquake induced forces causing structural damage or personal injury. (Significant)

The project site is underlain by bedrock, colluvium, Bay Mud and some artificial fill. The grading plan proposes to include the excavation and fill placement of substantial volumes of material. As noted above the excavated or cut areas would reach up to 135 feet and filled areas are proposed to reach 59 feet. The onsite materials proposed for excavation have been evaluated and determined satisfactory for reuse as fill placement (Engeo, 2003). Typically, fill materials, according to long standing adopted specifications, are placed in thin layers, given appropriate moisture content if necessary and compacted to pre-determined levels. This process becomes what is known as placing engineered fills that are monitored as they are placed to meet or exceed established standards contained in grading ordinances and building codes.

The presence of Bay Muds in some areas of the project site will require special consideration. These deposits are well known for their compressibility and general weakness to support any kind of loading. There are established methods for improving their suitability for development which include surcharging prior to development and removal. Surcharging soils is accomplished through temporary pre-loading of soils through the placement of stockpiled materials, essentially causing

the Bay Muds to consolidate as much as possible prior to development. However, if the Bay Mud thicknesses are relatively minor, than excavation and removal of these layers can also reduce the hazard by replacement with engineered fill materials.

Differential settlement could occur at the project site due to the presence of differing conditions across project improvements. Differential settlement could damage building foundations, affect underground utilities and cause settlement of streets and roads. The proposed grading plan calls for areas that will transition from native materials to engineered fill areas. Improvements located within or across this transition zone may be susceptible to differential settlement where settlement rates differ based on differing engineering properties. Implementation of the engineering recommendations as indicated below in the mitigation measure would reduce the potential differential settlement within these transition zones.

Earthquake-induced settlement or densification is generally associated with loose sands above the groundwater table that are subjected to earthquake shaking. This densification can cause settlement somewhat similar to the effects seen from liquefiable soils where the loose sand grains are reoriented.

Implementation of the following measure, which could incorporate industry standard grading, fill placement and geotechnical practices, would reduce the potential hazard of to less-than-significant levels.

> **Mitigation Measure E.3:** The project applicant shall incorporate the geotechnical recommendations made for the project site by Engeo, Inc. pertaining to fill placement and site preparation including the fill transition zone areas as part of the project. In addition, the project applicant shall adhere to County grading and construction policies to reduce the potential for geologic hazards, including settlement and differential settlement. All construction activities and design criteria shall comply with applicable codes and requirements of the 2007 California Building Code (“Title 24”).

Significance after Mitigation: Less than Significant.

Impact E.4: Construction activities at the project area would loosen and expose substantial volumes of surface soils. If left exposed over long periods, soils would erode by wind or rain resulting in loss of topsoil. In addition, filled soils on slopes that are not adequately managed would be susceptible to erosion. (Significant)

Construction activities such as excavation, backfilling, grading and compaction can expose areas of loose soil that, if not properly stabilized, could be subjected to soil loss and erosion by wind and storm water runoff. Concentrated water erosion, if not managed or controlled, can eventually result in significant soil loss. Rates of erosion can vary depending on the soil material and structure, placement and human activity. Excessive soil erosion can eventually damage building foundations and roadways. Erosion is most likely to occur on sloped areas with exposed soil,

especially where unnatural slopes are created by cut-and-fill activities. Typically, soil erosion potential is reduced once exposed soils are graded and covered with structures, paving, or vegetation. During construction, the applicant will comply with erosion and sediment control measures in accordance with Contra Costa County requirements, construction best management practices for the reduction of pollutants in runoff and the State Water Resources Control Board National Pollution Discharge Elimination System ("NPDES") General Construction Permit requirements, including the development and implementation of a SWPPP incorporating Best Management Practices ("BMPs") (see Section 4.G, *Hydrology and Water Quality*). The SWPPP will identify BMPs for implementation during construction activities, such as detention basins, straw bales, silt fences, check dams, geofabrics, drainage swales and sandbag dikes. With implementation of these requirements, the potential for erosion would be minimized to a less-than-significant level.

However, over the long term operational phase of the project some erosional effects could develop on the upland exposed slope. The exposed slope will consist of a heterogeneous surface that could expose bedrock with varying degrees of competency. Some areas may be more susceptible to weathering from storm events than others. While the drainage terraces will act to retain any minor slumps or rock falls, maintenance of these terraces will ensure long term stability. Hydroseeding and vegetative control of the upland slopes may also present challenges which could make them susceptible to erosion. With implementation of the mitigation measure below, the impact would be less than significant.

> **Mitigation Measure E.4:** The project applicant shall maintain a minimum 90 percent vegetative cover of exposed slopes upland of the proposed development for the life of the project. Drainage conveyances on the cut terraces shall be maintained to permit a minimum of 85 percent of total conveyance capacity. Any evidence of gulley or rill erosional effects shall be remedied immediately by the applicant through additional hydroseeding or other industry standard measures for erosion control.

Significance after Mitigation: Less than Significant.

Cumulative Impacts

Impact E.5: The project, in conjunction with cumulative development, would not result in significant cumulative impacts with respect to geology, soils or seismicity (Less than Significant)

Development of the project, with implementation of the identified mitigation measures above, would have less-than-significant impacts related to exposing persons or structures to geologic, soils, or seismic hazards. The project, combined with past, present and other reasonably foreseeable development in the area, would result in increased population and development in an

area subjected to seismic risks and hazards.[12] However, the entire San Francisco Bay Area is located within a seismically active region with a wide range of geologic and soil conditions relating to varying degrees of hazards. These conditions can vary widely within a short distance, making the cumulative context for potential impacts more localized and even site-specific. All construction phases of this project and other foreseeable projects in the area, would be required to implement mitigation measures similar to those above and adhere to all federal, state and local programs, requirements and policies pertaining to building safety and construction permitting. All projects would be required to adhere to the County's Building Code and Grading Ordinance. Therefore, the Bayview Residential Project, combined with past, present and other foreseeable development in the area, would not result in a cumulatively significant impact by exposing people or structures to risk related to geologic hazards, soils and/or seismic conditions.

Mitigation: None required.

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[12] County staff identified approved, but not yet completed projects within the vicinity of the project site area. Each of the projects identified for consideration in the cumulative scenario would introduce new residential uses to the project vicinity. They include Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane), and Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard). Future new development within the area would be subject to development guidance contained within the General Plan.

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F. Hazards and Hazardous Materials

Introduction

This section provides an overview of the presence of hazardous materials within the project area, the potential impacts from project construction and operation and the regulations applicable to environmental protection and health and safety.

The California Code of Regulations ("CCR") defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed (CCR, Title 22, Division 4.5, Chapter 10, Article 2, Section 66260.10). Hazardous wastes are hazardous materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal.

Hazardous materials and hazardous wastes are classified according to four properties: toxicity, ignitability, corrosivity and reactivity (CCR, Title 22, Chapter 11, Article 3). Factors that influence the health effects of exposure to a hazardous material include the dose to which the person is exposed, the frequency of exposure, the exposure pathway and individual susceptibility. The four basic exposure pathways through which an individual can be exposed to a chemical agent include: inhalation, ingestion, bodily contact and injection.

Setting

A preliminary site assessment, commonly referred to as a "Phase I" investigation, seeks to identify the presence or likely presence of hazardous materials at a project site under conditions that indicate an existing release, a past release, or a material threat of release of hazardous materials into structures on the site or into the ground, groundwater, or surface water of the site. A Phase I investigation also seeks to assess whether such conditions warrant further investigation, such as subsurface soil and groundwater sampling, referred to as a "Phase II" investigation.

During Phase I investigations, environmental professionals, among other things, research site history, perform a regulatory database review and conduct a site reconnaissance for the site and surrounding area. Methods to obtain historical information pertaining to the site include the review of historical aerial photographs, topographical maps and Sanborn Fire Insurance Maps. A Phase I generally includes a review of potential offsite sources of contamination that may be of potential environmental concern due to their proximity to the project site. A Phase II generally involves subsurface sampling of soil or groundwater at a project site to evaluate the extent of known or suspected contaminant releases.

A Phase I investigation has been conducted on the project area and the information contained within the Ceres Associates August 22, 2003 report was used as a primary source of information for this analysis. No Phase II investigation has been performed at the project site.

Regional Setting

The project site is part of the unincorporated communities along the northern I-680 corridor east of Martinez. The region is currently characterized by a mix of open space and developed lands that include residential areas, roads, trails, gas pipelines, railroad tracks, a waterbird preserve, a landfill, wastewater treatment facilities and other industrial uses. The project site is bounded by I-680 and the Contra Costa Canal to the southwest, a residential development on Palms Drive to the northwest, an unpaved portion of Central Avenue separating it from Acme Landfill property to the east and northeast and the Burlington North Santa Fe Railroad tracks to the south.

Pipelines carrying crude oil and refined petroleum products (gasoline, diesel fuel and jet fuel) run under Central Avenue and intersect the project site along a wetland area on the northwestern boundary. The railroad tracks include tracks used by the Burlington North Santa Fe Railroad lines. The landfill is no longer actively accepting refuse as a final depository however there is a fully operational refuse transfer station within the landfill site, located approximately 0.3 miles north of the project site. A former firewood and wood chipping facility abuts the project site to the east. A combination of undeveloped lands and recreational vehicle storage occupy the area immediately south of the railroad tracks.

Project Setting

The project site is approximately 78 acres and currently undeveloped land. The site includes a prominent hill towards the western boundary of the site with the majority of the project site sloping off to the east. Vegetation includes some trees, but is mostly covered by grasses and weeds. Overhead power lines bisect the project site.

Project Site History

According to the Phase I report, the project site appears to have been undeveloped land dating back to at least 1939 (Ceres, 2003). The Phase I report reviewed aerial photographs from the years 1939, 1950, 1959, 1970, 1980, 1988, 1996 and 1999 (Ceres, 2003). None of the aerial photographs showed signs of any development on the project site. However, according to the geotechnical investigation prepared for the site, there was evidence of previous quarrying activity on the east facing slope of the hill (Engeo, 2003). The surrounding area was also undeveloped until the 1970s when some of the neighboring residential developments began to appear.

Hazardous Materials Use

Based on the history of the site use, the Phase I report and the site visit by ESA, there does not appear to be any evidence of hazardous materials use on the project site including underground storage tanks, above ground storage tanks, hazardous building materials (asbestos, lead based paint, mercury, etc.), or polychlorinated biphenyls (“PCBs”). According to interviews and

regulatory agencies contacted for the Phase I investigation, no existing files or database entries exist for the project site (Ceres, 2003). In addition, a review of environmental databases maintained by the Department of Toxic Substances Control and State Water Resources Control Board did not include the project site among sites known to be Federal Superfund, State Response, Voluntary Cleanup, School Cleanup, Hazardous Waste Permit, Hazardous Waste Permit and Corrective Action, Leaking Underground Fuel Tank, or Spills, Leaks, Incidents and Cleanup sites (DTSC, 2008).

However, the project site includes a wedge shaped parcel on the eastern boundary of the project site which is crossed by three gas pipelines. The pipelines include easements from Chevron, Santa Fe Pacific Partners L.P. ("SFPP") and Kinder Morgan Energy Partners, L.P ("KMP"). As mentioned above, these pipelines carry a variety petroleum products including crude oil and its refined products such as gasoline and diesel. The SFPP and KMP pipelines are 8 inch diameter underground pipelines made of welded steel that are coated and have cathodic protection (CCCCDD, 2005). The Chevron pipeline is constructed of high-grade high-strength carbon steel and is 12.75 inches in diameter. The Chevron pipeline includes many safety features including computerized monitoring, cathodic protection and remotely operated block valves (CCCCDD, 2005).

Surrounding Sites

The project site is surrounded by a wide range of land uses that includes sites with a history of hazardous materials or waste uses. The Phase I report identified two state sites within 1 mile of the project site, four leaking underground storage tank sites and two solid waste landfill sites within 0.5 miles, one registered fuel tank within 0.25 miles of the project site and only one site within 0.125 miles of the project site which was listed as a solid waste landfill site (Ceres, 2003). However, the report concluded that there was no evidence to suggest that any of these sites have impacted the environmental quality of the project site (Ceres, 2003). Groundwater flow typically mimics topography which would indicate that flow on the project site generally radiates outward from the top of the hill and for most of the project site generally flows toward the northeast. Therefore, all of the identified sites are located either cross or down gradient of the project site and unlikely to have migrated onto the project site.

Regulatory Framework

Federal

Hazardous materials are subject to numerous laws and regulations at all levels of government, the major objective of which is to protect public health and the environment. In general, these regulations provide definitions of hazardous substances; establish reporting requirements; set guidelines for the handling, storage, transport, remediation and disposal of hazardous waste; and require health and safety provisions for workers and the public. Regulatory agencies also maintain databases of sites that handle hazardous wastes or store hazardous substances in underground storage tanks, as well as sites where soil or groundwater quality may have been affected by hazardous substances.

The major federal, state and regional agencies enforcing these regulations include: the U.S. Environmental Protection Agency ("EPA"), U.S. Department of Labor Occupational Safety and Health Administration ("OSHA"), U.S. Department of Transportation ("DOT"), the Department of Toxic Substances Control, the San Francisco Regional Water Quality Control Board ("RWQCB") and the Contra Costa Health Services, Hazardous Materials Management programs.

State of California

Hazardous Materials Management and Emergency Planning

State and federal laws require businesses that handle hazardous materials to ensure that the hazardous materials are properly handled, used, stored and disposed of and in the event that such materials are accidentally released, to prevent or reduce injury to health and the environment. California's Hazardous Materials Release Response Plans and Inventory Law, sometimes called the "Business Plan Act," aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to hazardous materials emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated emergency response agencies, to illustrate on a diagram where the materials are stored, to prepare an emergency response plan and to train employees to use the materials safely. This law is implemented locally by the Contra Costa Health Services, Hazardous Materials Management program.

Hazardous Waste Handling

The California Environmental Protection Agency ("Cal EPA"), Department of Toxic Substances Control ("DTSC") regulates the generation, transportation, treatment, storage and disposal of hazardous waste. The Cal EPA has authorized DTSC to enforce hazardous waste laws and regulations in California. State requirements assign "cradle-to-grave" responsibility for hazardous waste to hazardous waste generators. Anyone who creates a hazardous waste is considered a hazardous waste generator. Generators must ensure that their waste is disposed of properly and legal requirements dictate the disposal requirements for many waste streams (e.g., banning many types of hazardous wastes from landfills). All hazardous waste generators must certify that, at a minimum, they make a good faith effort to minimize their waste and select the best waste management method available. Hazardous waste laws and regulations are enforced locally by the Contra Costa Health Services.

In Contra Costa County, remediation of contaminated sites is performed under the oversight of Contra Costa Health Services with the cooperation of the RWQCB. At sites where contamination is suspected or known to occur, the project sponsor is required to perform a site investigation and draw up a remediation plan, if necessary. For typical development projects, actual site remediation is done either before or during the construction phase of the project. Site remediation or development may be subject to regulation by other agencies. For example, if dewatering of a hazardous waste site were required during construction, subsequent discharge to the sewer collection system could require a permit from Contra Costa Water District, while discharge to a storm drain could require a permit from both the Contra Costa Health Services and the San Francisco RWQCB.

Worker Safety

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the work place. The California Division of Occupational Safety and Health ("Cal OSHA") and the federal Occupational Safety and Health Administration are the agencies responsible for assuring worker safety in the workplace. Cal OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices. At sites known to be contaminated, a Site Safety Plan must be prepared to protect workers. The Site Safety Plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at a contaminated site.

Hazardous Materials Transportation

The U.S. Department of Transportation ("DOT") has developed regulations pertaining to the transport of hazardous materials and hazardous wastes by all modes of transportation. The U.S. Postal Service ("USPS") has developed additional regulations for the transport of hazardous materials by mail. DOT regulations specify packaging requirements for different types of materials. The EPA has also promulgated regulations for the transport of hazardous wastes. These more stringent requirements include tracking shipments with manifests to ensure that wastes are delivered to their intended destinations. In California, the California Highway Patrol, DOT and DTSC play key roles in enforcing hazardous materials transportation requirements.

Local Plans and Policies

Contra Costa County General Plan

The County of Contra Costa has established goals, policies and programs in regards to hazardous materials. These are outlined in the Conservation and Safety Elements of the *Contra Costa County General Plan*. The following goals and policies are directly related to the project:

> *Goal 10-I:* To provide public protection from hazards associated with the use, transport, treatment and disposal of hazardous substances.
>
> *Policy 10-62*: Storage of hazardous materials and wastes shall be strictly regulated.
>
> *Policy 10-63*: Secondary containment and periodic examination shall be required for all storage of toxic materials.

Contra Costa County Code

The ordinance code for Contra Costa County is current through Ordinance 2005-34 and the October, 2005 code update and includes ordinances relating to Hazardous Materials Release Plans and Responses.

> *450-2.002 Purpose:* Health and Safety Code Chapter 6.95 requires, among other things, that any business which handles a specified quantity of a hazardous material establish a business plan for emergency response to a release or threatened release of a hazardous material, which includes an inventory of hazardous materials handled by the business and report to the administering agency and the State Office of Emergency Services, occurrences of specified releases or threatened releases of hazardous materials.

> The purpose of this division is to impose regulations in addition to Health and Safety Code Chapter 6.95, for the protection of the public and emergency rescue personnel in the county and to facilitate implementation of said chapter, as authorized by Health and Safety Code Section 25500. (Ordinances. 88-74 § 2, 87-5 § 2)

Impacts and Mitigation Measures

Significance Criteria and Analysis Methodology

According to Appendix G of the CEQA *Guidelines*, implementation of the project would result in a significant hazardous materials impact if it would:

- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous material into the environment;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school;
- be located on a site that is included on a list of hazardous materials sites compiled pursuant to government code section 65962.5 and as a result, would create a significant hazard to the public or the environment;
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;
- for a project within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport, or a private airstrip, the project would result in a safety hazard for people residing or working in the project area; or
- expose people or structures to a significant risk of loss or injury involving wildland fires.

The following section identifies specific impacts pertaining to hazards or hazardous materials and assesses the change from the existing conditions. The impact analysis of the project impacts is based on the significance criteria listed above. Certain significance criteria do not apply to the project and are not discussed further; the project site is not included on a list of hazardous materials sites; the project would not obstruct any existing access roads and therefore would not interfere with any emergency response or evacuation plans; the project site is not located within 0.25 miles of a school, 2 miles of a private airstrip, or within 2 miles of an airport; and the project site is located in a developed urban area that is not at high risk of wildland fires.

Impacts

Impact F.1: Hazardous materials used on-site during construction activities (i.e., solvents) could be released to the environment through improper handling or storage. (Significant)

Construction activities would require the use of certain hazardous materials such as fuels, oils, solvents and glues. Inadvertent release of large quantities of these materials into the environment could adversely impact soil, surface waters, or groundwater quality. However, the onsite storage and/or use of large quantities of materials capable of impacting soil and groundwater are not typically required for a project of this proposed size and type. As discussed in the Section 4.G, *Hydrology and Water Quality*, the project would be required to prepare a Storm Water Pollution Prevention Plan which would include Best Management Practices ("BMPs") that cover the methods to handle hazardous materials during construction. Implementation of these BMPs as described in the mitigation measure below would reduce the potential impact to a less-than-significant level.

> **Mitigation Measure F.1:** The use of construction best management practices shall be implemented as part of construction to minimize the potential negative effects of accidental release of hazardous materials to groundwater and soils. These shall include the following:

- Follow manufacturer's recommendations on use, storage and disposal of chemical products used in construction;
- Avoid overtopping construction equipment fuel gas tanks;
- During routine maintenance of construction equipment, properly contain and remove grease and oils.
- Properly dispose of discarded containers of fuels and other chemicals.

Significance after Mitigation: Less than Significant.

Impact F.2: Project operations would generate general household and maintenance hazardous waste. (Less than Significant)

The project proposes to develop the currently undeveloped land to accommodate 163 residential units along with some dedicated open space. Residential land use includes the use, storage and disposal of a variety of household chemicals and hazardous materials. These materials would include familiar items such as limited quantities of fuels, solvents, toners, paints, lubricants, kitchen and restroom cleaners and other maintenance materials. Hazardous wastes used in the residential or maintenance areas may include small quantities of lubricants or fuels used in maintaining personal resident's vehicles, pesticides or herbicides, solvents, paints and lubricants. These common consumer products would be used for the same purposes as in any residential setting. The types of hazardous materials generally handled in the residences typically constitute small quantities and the health effects associated with them are generally not as serious as

industrial uses. Implementation of the project would not cause an adverse effect on the environment with respect to the use, storage, or disposal of general household hazardous substances generated from proposed building uses and therefore the impact would be considered less than significant.

Mitigation: None required.

Impact F.3: The crude oil pipelines that transect the project site would represent a hazard to the public or environment in the event of accidental upset. (Less than Significant)

The transfer of bulk hazardous materials through underground pipelines is generally considered to be the safest means possible (CCCCDD, 2005). The risk of unintentional releases from hazardous liquid pipelines was evaluated as part of the planning for the Chevron pipeline and determined to have a very low potential for unintentional releases across the entire 1.6 mile segment (CCCCDD, 2005). The analysis and modeling conducted for the entire pipeline determined that the ratio of site casualties to societal risk was 0.09 which is far less than the significant threshold of 1.0. Therefore, the risk of an unintentional release occurring on or near the project site, which represents a much smaller segment of the total pipeline, would be even less. In addition, a risk assessment was conducted for the Seal Island Estates development located just north of the project site, along Seal Island Drive, which is also immediately adjacent to the existing petroleum pipelines. The findings of the assessment concluded that with conservative assumptions, the level of risk was much less than one in one million and therefore determined to be acceptable (Quest, 2008). Therefore, the potential impact is less than significant.

Mitigation: None required.

Impact F.4: The proposed residences would be located relatively close to the Burlington Northern Santa Fe Railroad tracks which are used to transport hazardous materials among other types of freight. In the event of accidental upset through derailment or other means, release of hazardous materials could represent a hazard to the public or environment through inhalation. (Less than Significant)

The Burlington Northern Santa Fe Railroad runs along the southern boundary and the trains that use these tracks can carry hazardous materials that include toxic risks from inhalation. Transportation of hazardous materials by rail is regulated by the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA). The safe transport of hazardous materials by rail is overseen by the Office of Hazardous Materials Safety (OHM) within PHMSA. The mission of OHM is to minimize the risks to life and property inherent in commercial transportation of hazardous materials. In a comparison of risk compiled by OHM, accidental deaths for the United States over the period of 1999-2003 were compared for various reasons such as motor vehicle related, poisoning, drowning, railroads, air carriers,

hazardous material transportation and others (OHM, 2008). Motor vehicle fatalities were listed with the most during that time (36,676 for a 5 year average) and also as having the highest risk to the general population (1 out of 7,700). Railroad fatalities were listed ninth with a 5 year average of 931 fatalities with a risk to the general population of 1 out of 306,000 or 1.3 deaths per million train miles. Hazardous materials transportation was listed 18th with a 5 year average of 12 fatalities with a risk to the general population of 1 out of 23,350,000 or 4.2 deaths per 100 million shipments. Whereas, this risk comparison does not also include a study of injuries, this national study does seem to indicate that the potential for an accidental upset condition to occur in close enough proximity to cause future residents at the project site significant injury or worse is very low. Therefore, the potential impact to future residents from accidental upset of a train carrying hazardous materials is less than significant.

Mitigation: None required.

Cumulative Impacts

Impact F.5: Operation of the project in combination with other developmental projects in the site vicinity would not contribute to cumulative hazards and hazardous materials impacts in the project area. (Less than Significant)

As discussed above, the project would result in potentially significant project-level hazardous material impacts related to construction activities. The project development, with implementation of the identified mitigation measures above, however, would have a less-than-significant hazardous materials impact to the public or the environment within the vicinity of the project area. Hazardous material impacts typically occur in a local or site-specific context versus a cumulative context combined with other development projects. It is possible, however for combined effects of transporting and disposal of hazardous materials to be affected by cumulative development.

Other foreseeable development within the area, although likely increasing the potential for accidental upset during construction and the handling of limited quantities of hazardous materials associated with residential use, would be required to comply with the same regulatory framework as the project.[1] This includes federal and state regulatory requirements for transporting (Cal EPA and Caltrans) hazardous materials or cargo (including fuel and other materials used in all motor vehicles) on public roads or disposing of hazardous materials (Cal EPA, DTSC, Contra Costa

[1] County staff identified approved, but not yet completed projects within the vicinity of the project site area. Each of the projects identified for consideration in the cumulative scenario would introduce new residential uses to the project vicinity. They include Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane) and Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard). Future new development within the area would be subject to development guidance contained within the General Plan.

County). Therefore, the effect of the Bayview Residential Project on hazardous materials, in combination with other foreseeable projects, would not be significant.

Therefore, the cumulative impact is negligible and less than significant.

Mitigation: None required.

References – Hazards and Hazardous Materials

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Engeo Incorporated, Geotechnical Exploration, Bayview Subdivision, Martinez, California, August 15, 2003.

DTSC, EnviroStor Database Search, Martinez CA, http://www.envirostor.dtsc.ca.gov/public/map.asp?global_id=&x=-119.1357421875&y=37.82280243352756&zl=5&ms=640,480&mt=m&findaddress=True&city=MARTINEZ&zip=&county=&federal_superfund=true&state_response=true&voluntary_cleanup=true&school_cleanup=true&permit_site=true&ca_site=true&permit_and_ca_site=true, accessed May 13, 2008.

Office of Hazardous Materials Safety (OHM), *A Comparison of Risk, Accidental Deaths – United States – 1999-2003,* http://hazmat.dot.gov/riskmgmt/riskcompare.htm, accessed September 11, 2008.

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G. Hydrology and Water Quality

Introduction

This section describes the existing hydrology and water quality conditions in the project area and applicable federal, state and local regulations. This section also discusses potential project-related impacts to surface water and groundwater resources, including water quality, flooding and stormwater runoff.

Setting

Regional Setting

The project site lies in Suisun Basin in the San Francisco Bay hydrologic region. The San Francisco Bay estuarine system conveys the waters of the Sacramento and San Joaquin rivers into the Pacific Ocean. The two rivers enter the San Francisco Bay estuary through the Sacramento-San Joaquin Delta at the eastern end of Suisun Bay. The San Francisco Bay marks a natural topographic separation between the northern and southern coastal mountain ranges. The Suisun Basin is bounded by San Pablo Basin to the northwest, South Bay basin to the west and Central Basin to the south. Flows in the region are highly seasonal with greater than 90 percent of annual runoff occurring during rainy season between November and April (RWQCB, 1995). The topography of the area consists of gentle sloping lowlands ranging in elevation from sea level to 300 feet. The floor of the valley slopes gently to the northwest. Average annual precipitation in the basin ranges from 17 to 21 inches increasing from east to west (DWR, 2004).

Project Setting

Hydrology

The approximately 78-acre-project site lies in the Walnut Creek watershed near the City of Martinez (Guide to San Francisco Bay Area Creeks, 2009). The site is located south of Central Avenue, north of the Burlington Northern Santa Fe (BNSF) Railroad and west of Pacheco Creek in the Vinehill/Pacheco Boulevard Area of unincorporated Contra Costa County. The Acme landfill property is located east and downgradient of the project site separated by an unpaved portion of Central Avenue. I-680 and the Contra Costa Canal are located southwest of the site. The 48-mile Contra Costa Canal delivers water from the Delta to the Contra Costa Water District's treatment facilities and raw-water customers. The canal starts at Rock Slough in East Contra Costa County, ends at the Terminal Reservoir in Martinez and traverses along Pacheco Boulevard abutting the western boundary of the project site at the lower end of the hill.

The project site has a hilly topography with elevations ranging from approximately 283 feet in the western portion to approximately 4 feet above mean sea level in the southern and eastern portions**.** The site drains into Pacheco Creek on the eastern side, which receives flows from Walnut and Grayson Creeks and flows north into Suisun Bay. The site is undeveloped and covered with seasonal grasses. The site is characterized by poorly draining soils and steep slopes

with marshy areas on the southern portion and eastern portion adjacent to the Pacheco Creek. The low permeability of clay soils at the site allows for lesser infiltration. Runoff from adjacent sites, mainly from between Palms Drive and Central Avenue, drains into the project site, which flows into Pacheco Creek (Isakson & Associates, Inc., 2006).

Groundwater

The project area is underlain by the Ygnacio Valley Groundwater Basin which is bounded by Suisun Bay on the north, I-680 on the west, Clayton Valley Groundwater Basin on the east and city of Walnut Creek on the south. The water bearing units of the basin are Quaternary Alluvium and Alluvial valley fill deposits. The combined thickness of these deposits exceeds 700 feet. Hydrographs created from California Department of Water Resources ("DWR") well data in the Ygnacio Valley Groundwater Basin indicate that groundwater levels have declined gradually over the period of record. The depth to groundwater is generally greatest in summer months and shallowest in winter months. No published data on groundwater storage capacity is found (DWR, 2004). Based on the groundwater level data in the Ygnacio Valley basin, subsurface water levels occur at up to 10 feet below ground surface (DWR, 2008). The highest groundwater level encountered in the project area was at 3 feet below ground surface (Isakson & Associates, Inc., 2006).

Flooding

The Federal Emergency Management Agency (FEMA) is responsible for management of floodplain areas defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a one percent or greater chance of flooding in any given year (also termed the 100-year floodplain). The project site lies outside the 100-year floodplain areas (Contra Costa County, 2005) and within an area designated as Zone C, which is an area of minimal flooding (FEMA, 2001). The Contra Costa County Flood Control District (CCCFCD) owns a flood control easement along Pacheco Creek and by Central Avenue. The project sponsor may be required to obtain an approval or a permit from the CCCFCD for constructing sections of paved roads within the easement (Isakson & Associates, Inc., 2006).

Sea Level Rise

Greenhouse effect is a phenomenon that is projected to cause a rise in sea level over the next century, creating flooding issues. The anticipated rise is believed to be caused by warming of the global climate due to increase in concentrations of gases such as carbon dioxide and methane in the atmosphere, which results from activities such as burning of fossil fuel and deforestation. The U.S. Environmental Protection Agency ("US EPA") suggests a rate of four feet sea level rise in a century for the San Francisco Bay Area (Contra Costa County, 2005).

Regulatory Framework

Federal

Clean Water Act

The federal Clean Water Act ("CWA") and amendments, under the enforcement authority of the U.S. EPA, was enacted to restore and maintain the chemical, physical and biological integrity of the Nation's waters. The CWA granted the U.S. EPA with the authority to implement pollution control programs. The National Pollution Discharge Elimination System ("NPDES") permit program under Section 402(p) of the CWA regulates sources that discharge pollutants into the waters of the United States. In general, implementation of the NPDES permit program has been delegated to individual states. California has an approved state NPDES program, which is administered by the State Water Resources Control Board ("SWRCB"). The SWRCB has nine regional water quality control boards ("RWQCBs"). The San Francisco Bay RWQCB regulates water quality in the project area.

Section 303(d) of the CWA requires that each state identify water bodies or segments of water bodies that are impaired. Impaired water bodies refer to water bodies that do not meet one or more water quality standards established by the state. Once a water body or segment is listed, the state is required to establish a Total Maximum Daily Load ("TMDL") for the identified pollutant. The TMDL is the quantity of a pollutant that can be assimilated by a water body without violating water quality standards. Carquinez Strait, Suisun Bay and Sacramento-San Joaquin River Delta in the region are included on the 303(d) list. Carquinez Strait and the Delta are listed for chlordane, DDT[1], dieldrin, dioxin compounds, exotic species, furan compounds, mercury, PCBs[1] and selenium. Suisun Bay is listed for all the aforementioned constituents and nickel (RWQCB, 2006).

National Pollutant Discharge Elimination System

The NPDES program under the CWA prohibits discharges into navigable waters except for discharges that are in compliance with specified requirements and authorizations. In California, the U.S. EPA has delegated the implementation of this program to the SWRCB and to the RWQCBs (San Francisco Bay RWQCB in the project area).

The NPDES permits include municipal stormwater permits that regulate stormwater runoff from short-term construction activities and in the long term during the life of a project. Stormwater from construction activities is regulated under the statewide General Construction Permit and long term stormwater runoff from projects (e.g., developments) is regulated on the local level (both permits are discussed below in the state and local sections, respectively).

[1] DDT = Dichloro-diphenyl-trichloroethane, PCBs = Polychlorinated biphenyls

State of California

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act, Division 7 of the California Water Code, provides the basis for water quality regulation within California. The Act allows the SWRCB to adopt statewide water control plans or basin plans. The plans establish water quality objectives for water bodies within the state. The San Francisco Bay RWQCB developed the *San Francisco Bay Basin Plan* in 1995, last amended in 2007, which established water quality objectives, implementation programs to meet the stated objectives and to protect the beneficial uses of the San Francisco Bay waters (see *Basin Plan* below). The Act also authorizes the NPDES program under the CWA.

General Construction Permit

Construction activities on one acre or more are subject to the requirements of the NPDES General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (General Construction Permit). The SWRCB established the General Construction Permit for the purpose of reducing impacts to surface waters that may occur due to construction activities. The project would involve construction over more than one acre of land, therefore would be subject to the General Construction Permit. The project sponsor would be required to prepare and implement a stormwater pollution prevention plan ("SWPPP"). The SWPPP is prepared before project construction begins and it includes specifications for best management practices ("BMPs") that would be implemented during construction. BMPs are measures undertaken to control degradation of surface water by preventing soil erosion or the discharge of pollutants from the construction area. Additionally, the SWPPP describes measures to prevent or control runoff after construction is complete and identifies procedures for inspecting and maintaining facilities or other project elements. Required elements of a SWPPP include:

1. Site description addressing the elements and characteristics specific to the site,
2. Descriptions of BMPs for erosion and sediment control,
3. BMPs for construction waste handling and disposal,
4. Implementation of approved local plans,
5. Proposed post-construction controls and
6. Non-stormwater management.

The *California Storm Water Best Management Practice Handbook* (Storm Water Quality Task Force, 2003) provides a detailed list of BMPs that can be included in the SWPPP to effectively reduce degradation of surface waters to an acceptable level. Examples of typical construction BMPs include scheduling or limiting activities to certain times of the year, installing sediment barriers such as silt fence and fiber rolls, maintaining equipment and vehicles used for construction, tracking controls such as stabilizing entrances to the construction site and developing and implementing a spill prevention and cleanup plan. Non-stormwater management includes installing specific discharge controls during activities such as paving operations and vehicle and equipment washing and fueling.

Dewatering Permit

Construction activities such as excavation and trenching in areas with shallow groundwater would require dewatering, which would be subject to the SWRCB construction dewatering permit requirements. Dewatering operations are regulated under State requirements for stormwater pollution prevention and control. Discharge of non-stormwater from a trench or excavation that contains sediments or other pollutants to sanitary sewer, storm drain systems, creek bed (even if dry), or receiving waters is prohibited. Discharge of uncontaminated groundwater from dewatering is a conditionally exempted discharge by the RWQCB. However, the removed water could potentially be contaminated with chemicals released from construction equipment or sediments from excavation. Therefore, disposal of dewatering discharge would require permits either from the RWQCB for discharge to surface creeks and groundwater or from local agencies for discharge to storm or sanitary sewers. The SWRCB lists non-stormwater discharge controls specifically for dewatering operations (SWRCB, 2003). The control measures would be implemented by the project sponsor during construction activities at the project site. Discharge of water resulting from dewatering operations would require an NPDES Permit, or a waiver (exemption) from the RWQCB, which would establish discharge limitations for specific chemicals (if they occur in the dewatering flows).

Basin Plan

The San Francisco Bay RWQCB prepared the *San Francisco Bay Water Quality Control Plan* (Basin Plan) (1995) that contains descriptions of the legal, technical and programmatic bases of water quality regulation in the region. The Basin Plan describes beneficial uses of major surface waters and their tributaries. The RWQCB is responsible for protecting the beneficial uses listed for the water bodies. **Table 4.G-1** lists the beneficial uses for Suisun Bay, Carquinez Strait and the Delta provided in the Basin Plan.

Local Plans and Regulations

Contra Costa Clean Water Program

The Contra Costa County Clean Water Program (CCCWP) is a cooperative entity formed of Contra Costa County, the Contra Costa Flood Control & Water Conservation District and 16 incorporated cities. The San Francisco Bay RWQCB issued the NPDES Permit CAS0029912, revised Order No. R2-2003-022 to the CCCWP that contains requirements to prevent stormwater pollution and to protect and restore creek and wetland habitat. The RWQCB mandated that the municipalities (or co-permittees; Contra Costa County in this case) impose new, more stringent requirements to control runoff from development projects within their jurisdiction. The RWQCB added Provision C.3 in the permit that requires the Cities and the County to implement BMPs to reduce pollutants in stormwater discharges to the maximum extent practicable standard and establishes specific thresholds and criteria. The C.3 requirements are not only intended to reduce short-term construction-related stormwater runoff and resultant pollution but they are also intended to reduce the long-term adverse effects by requiring permanent runoff control measures as a part of development projects.

TABLE 4.G-1
BENEFICIAL USES OF WATER BODIES IN PROJECT AREA

	Water Bodies		
Beneficial Uses	**Suisun Bay**	**Carquinez Strait**	**Sacramento-San Joaquin Delta**
Agricultural Supply			✓
Municipal and Domestic Supply			✓
Freshwater Replenishment			✓
Groundwater Recharge			✓
Industrial Service Supply	✓	✓	✓
Industrial Process Supply		✓	✓
Ocean, Commercial and Sport Fishing	✓	✓	✓
Estuarine Habitat	✓	✓	✓
Fish Migration	✓	✓	✓
Preservation of Rare and Endangered Species	✓	✓	✓
Fish Spawning	✓	✓	✓
Wildlife Habitat	✓	✓	✓
Water Contact and Noncontact Water Recreation	✓	✓	✓
Navigation	✓	✓	✓

SOURCE: RWQCB, 1995.

The project sponsor would be required to implement treatment and source control measures, runoff flow control and site design/landscape characteristics as feasible, which maximize infiltration (where appropriate), provide retention or detention, slow runoff and minimize impervious land coverage, so that post-development pollutant loads from the site have been reduced to the maximum extent possible. Because it would discharge directly to one or more water bodies listed as impaired (under section 303(d) of CWA), the project must ensure that post-project runoff does not exceed pre-project levels for such pollutants through implementation of the control measures addressed in the C.3 provision, to the maximum extent practicable. In addition, the project sponsor must prepare operation and maintenance plans and execute agreements, in this case with the home owners, to ensure that the stormwater treatment devices are maintained in perpetuity.

In compliance with C.3 requirements the project sponsor must submit a Stormwater Control Plan in accordance with the CCCWP Stormwater C.3 Guidebook. This requirement is in addition to the erosion and sediment control and pollution prevention measures required during construction. The Stormwater Control Plan must identify potential sources of stormwater pollutants in the development and corresponding BMPs for each potential source. The project would be required to ensure that stormwater runoff does not exceed pre-project peaks and durations.

Contra Costa County General Plan

The *Contra Costa County General Plan* (2005) lists the following goals and policies concerning hydrology and water quality that would be applicable to the project.

> *Goal 8-T:* To conserve, enhance and manage water resources, protect their quality and assure an adequate long-term supply of water for domestic, fishing, industrial and agricultural use.
>
> *Policy 8-74:* Preserve watersheds and groundwater recharge areas by avoiding the placement of potential pollution sources in areas with high percolation rates.
>
> *Policy 8-75:* Preserve and enhance the quality of surface and groundwater resources.
>
> ***Policies for New Development Along Natural Watercourses***
>
> *Policy 8-91:* Grading, filling and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.
>
> *Policy 8-87:* Onsite water control shall be required of major new developments so that no increase in peak flows occurs relative to the site's pre-development condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts.

Contra Costa County Stormwater Drainage and Flood Control

The Contra Costa County Flood Control and Conservation District has developed regional drainage plans to guide developers in the implementation of new drainage systems serving development and to provide the basis for local and federal flood control projects. Local drainage infrastructure is provided by the developers as part of the land development process (Contra Costa County, 2005), as in the case of the project. Any increase in stormwater runoff from the proposed development would be required to be mitigated. The project site lies within an adopted drainage area, therefore the project would be required to meet the collect and convey requirements of the County subdivision ordinance and comply with drainage requirements as project approval conditions.

Contra Costa County Code and Ordinances

Division 914 under Title 9, Subdivisions of the Contra Costa Code, lists requirements for onsite and offsite stormwater collection and conveyance of stormwater from the subdivision and minimum capacities to which the drainage facilities should be designed. For example, the project would involve construction of “minor drainage facilities” (i.e., those serving a watershed area less than 1 square mile) therefore the facilities should have the capacity with sufficient freeboard to contain a 10-year frequency of average recurrence interval runoff. The Code restricts stormwater disposal into the County water conveyance facilities and requires protection of natural watercourses.

The Code states that before a protected watercourse (Pacheco Creek in this case) may be utilized for discharge of drainage flowing through or from a subdivision, the watercourse’s capacity and stability shall be substantiated through hydraulic calculations performed by a licensed engineer.

Design flow volumes in excess of the watercourse's reasonable capacity shall be conveyed around the protected watercourse or shall be detained in adequate detention basins meeting the requirements of Chapter 914-12. Flow velocities in excess of those permitted by Section 9146.202 shall be attenuated using environmentally-sensitive techniques approved by the public works department.

Division 1014 under Title 10 discusses stormwater management and discharge control in compliance with the C.3 requirements in the NPDES permit (discussed above) that would apply to the project. The ordinance requires preparation, review and approval of a Stormwater Control Plan in compliance with the *Stormwater C.3 Guidebook.*

Chapter 74 under Title 7, Building Regulations, describes the requirement of a drainage plan that would apply to the project. A drainage plan must include the following site information:

- Flow lines of surface and subsurface waters onto and off of the site;
- Existing and finished contours, at two-foot intervals;
- The location of any existing buildings, structures or improvements on the property where the work is to be performed and on adjacent lots;
- Sufficient information to demonstrate compliance with Chapters 816-4 (slope and hillside development) and 816-6 (protection of trees);
- The location of all existing natural and man-made drainage facilities for the storage or conveyance of runoff, including drainage swales, ditches, culverts and berms, sumps, sediment basins, channels, ponds, storm drains and drop inlets serving the site.

The drainage information must include the following:

- The location of all proposed natural and man-made drainage facilities for the storage or conveyance of runoff, including drainage swales, ditches, culverts and berms, sumps, sediment basins, channels, ponds, storm drains and drop inlets;
- All surface and subsurface drainage devices, walls, cribbing, dams and other protective devices to be built with or as a part of the proposed construction;
- Hydraulic calculations that show the flow-carrying capacities of proposed conveyance devices and justify the estimated runoff of the area served by any proposed conveyance device; and
- Discharges and velocities of proposed conveyance devices and storage volumes of any sumps, ponds or sediment basins.

The project is located within Drainage Area 57, for which a drainage fee is due in accordance with Flood Control Ordinance Number 88-86. By ordinance, all building permits or subdivision maps filed in this area are subject to the provisions of the drainage fee ordinance. Effective January 7, 1989, the current fee in this drainage area is $0.35 per square foot of newly created impervious surface. The drainage area fee for this lot should be collected prior to filing the final map.

Impacts and Mitigation Measures

Significance Criteria and Analysis Methodology

Based on the Appendix G of the CEQA *Guidelines*, implementation of the project would have a significant impact if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially degrade water quality;
- Substantially alter the existing drainage pattern of the site or area (including through the alteration of the course of a stream or river) in a manner that would result in substantial erosion or siltation on- or off-site;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or proposed uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area (including through the alteration of the course or by substantially increasing the rate or amount of surface runoff) in a manner that would result in flooding on- or off-site;
- Create or contribute substantial runoff that would exceed the capacity of existing or planned stormwater drainage systems;
- Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to a substantial risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Be subject to inundation by seiche, tsunami, or mudflow.

Impacts in this section are analyzed based upon the significance criteria listed above and by assessing the change in the existing conditions resulting from the project. The following impacts were considered in this section but were found to be absent from or not applicable to the project; therefore, no further discussion of these impacts is provided.

Groundwater Resources: With the exception of temporary dewatering during construction, the project would not involve extraction of groundwater and would not interfere with groundwater recharge. Construction dewatering is addressed in Impact G.2 below. Impervious surfaces are discussed in Impact G.3

100-Year Flood Zones: As discussed previously, the project site is not located within the 100-year floodplain, therefore the project would not place housing or structures that would impede or redirect flood flows within a 100-year flood hazard area.

Flooding from Failure of a Dam or Levee: The project site does not lie within inundation area of a dam or a levee. The closest dam structure is Martinez Reservoir, which is located greater than a mile west from the project site further west from I-680. The project would not expose public or structures to the risk of failure of dam or levee.

Inundation by Tsunami, Seiche, or Mudflow: The project site is located more than 25 miles inland of the Pacific Ocean. The influence of an ocean-borne tsunami wave would dissipate prior to reaching the project site, because of the distance of the site from the Golden Gate in San Francisco Bay. Seiches form in enclosed bodies of water. The risk from seiche is considered minimal because there are no enclosed water bodies in the immediate vicinity. Mudflows are mostly associated with slope failures. With implementation of the Mitigation Measure E.1, (see Section 4.E, *Geology and Soils*), the potential for slope stability to create safety hazards for the public and residents of the project would be reduced to a less-than-significant level. Therefore the possibility of mudflow is considered minimal. The project would not be subject to inundation by tsunami, seiche, or mudflows.

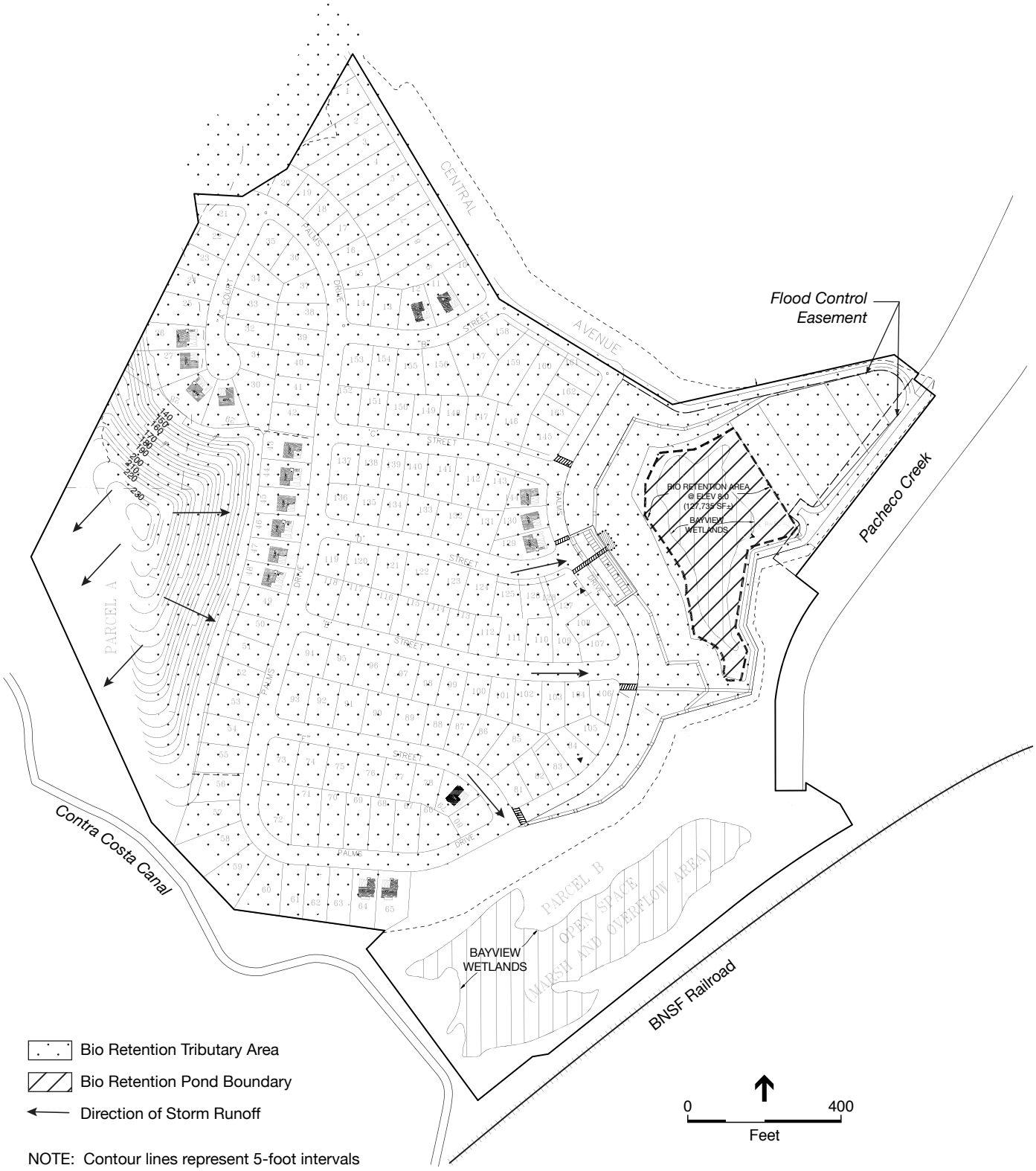
Impacts

Impact G.1: Project construction would cause erosion and increase stormwater runoff resulting in an adverse water quality impact. (Less than Significant)

Project construction would develop 42 acres for building single-family homes and access roads within a 78-acre project site. Approximately 36 acres would be utilized for open undeveloped area. Construction activities would involve excavation, soil stockpiling and boring along with cutting slope over an area of approximately 4.5 acres, building drainage terraces and a debris bench and filling the site as a part of a proposed grading plan (see **Figure 4.G-1**). These activities would generate loose, erodable soils that, if not properly managed, could be washed into surface water by rain or by water used during grading operations. Soil erosion could cause excess sediment loads and affect the water quality of the receiving waters (i.e., Pacheco Creek). Construction activities would involve use of fuel and other chemicals that if not managed properly could be washed off into the stormwater resulting in an adverse water quality impact.

Due to the sloping terrain and proximity to the Pacheco Creek and the marshy areas on the east and south, erosion and chemical use would threaten the water quality of the creek. However, the project would be subject to the General Construction Permit requirements therefore the project sponsor would prepare a Stormwater Pollution Prevention Plan (“SWPPP”) along with a Notice of Intent prior to construction. Implementation of the SWPPP would begin with the commencement of construction and continue though the completion of the project.

At a minimum, the SWPPP would include a description of construction materials, practices and equipment storage and maintenance, a list of pollutants likely to contact stormwater, site specific



SOURCE: Isakson & Associates Inc.

Bayview Residential Project . 208078

Figure 4.G-1
Proposed Hydrology at the Project Site

erosion and sedimentation control practices, list of provisions to eliminate or reduce discharge of materials to stormwater and BMPs for fuel and equipment storage. The project sponsor would develop and implement a monitoring program as required under the General Construction Permit. The project sponsor would require the contractor to conduct inspections of the construction site prior to anticipated storm events and after the actual storm events. During extended storm events, inspections would be conducted after every 24-hour period. The goals of these inspections are:

- to identify areas contributing to stormwater discharge,
- to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate and properly installed and functioning in accordance with the General Construction Permit and
- to evaluate whether additional control practices or corrective maintenance activities are needed.

Equipment, materials and workers would be available for rapid response to spills and/or emergencies. All corrective maintenance or BMPs would be performed as soon as possible, depending upon worker safety. Upon project completion, the project sponsor would submit a Notice of Termination to the RWQCB.

In addition, the project sponsor would prepare, submit and implement an approved drainage plan for the project. The drainage plan would include all the elements required under the Contra Costa County Code in compliance with the NPDES stormwater permit. In compliance with the Building Regulations of the County Code, all grading and cut/fill work would be performed under the inspection of a civil engineer or a soils engineer. The project sponsor would comply with the regular development requirements such as notifying the County building official for site inspection during the following three stages:

- *Initial*: When the site has been cleared of vegetation and unapproved fill and has been scarified, benched or otherwise prepared and before any fill is placed;
- *Rough*: When rough grading has been completed and approximate final elevations have been established; drainage terraces, swales and other drainage devices graded ready for paving; and
- *Final*: When work has been completed, all drainage devices, systems and facilities installed and slope planting has been established.

The project sponsor would comply with the applicable building regulations (Title 7 of the County Code) associated with excavations, fills, drainage and erosion control and would be responsible for assuring compliance with the approved development plans and with the requirements of the building division that include the following:

> *Compliance with plans and Building Division*: Carry out the proposed work only in accordance with the approved plans and specifications and in compliance with all the requirements of this division.

Inspections: In performing regular development work, notify the County building official at least one working day in advance so that the inspections can be made.

Protection of Utilities: Prevent damage to any public utilities or services during grading operations and

Temporary Erosion Control: Install and maintain precautionary measures necessary to protect adjacent watercourses and public or private property from damage by erosion, flooding and deposition of mud or debris originating from the side.

The project sponsor would submit the following maps and reports for review and approval to the County building official:

(a) A final report by the civil engineer certifying that all grading, lot drainage and drainage facilities have been completed and the slope planting installed in conformance with the approved plans and the requirements of this code with a final contour map if the work is not in substantial conformity with the approved plans;

(b) A report by the soil engineer including the recommended soil bearing capacity, a statement as to the expansive qualities of the soil and summaries of field and laboratory tests. The location of such tests and the limits of the compacted fill would be shown on a final plan, which would also provide, by plan and cross-section, the location of any subdrains, rock disposal areas and/or buttress fills involved in the work;

(c) An engineering geologist's report based on the final contour map including specific approval of the grading as affected by geological factors. The report would include a revised geologic map and cross-sections, with recommendations regarding the location of buildings or sewage disposal systems.

Regulatory compliance through implementation of BMPs to control soil erosion and release of hazardous materials into watercourses and complying with the applicable general plan policies for development in the proximity of watercourses (discussed above) would minimize any adverse water quality impact. The impact would be less than significant.

Mitigation: None required.

Impact G.2: Excavation during project construction could intercept shallow groundwater, which could be contaminated. The groundwater if released into the waterways, would affect the surface water quality. (Less than Significant)

Groundwater levels vary with seasons over the year. The shallow water table at the project site occurs at up to 10 feet below ground surface depending upon the time of the year (See *Groundwater* section in Setting above). Project construction activities particularly trenching, excavation and cutting the slope could intercept shallow or perched groundwater, requiring temporary localized dewatering to facilitate construction. Groundwater would be pumped and discharged to the local drainage system. Water from dewatering operations could contain materials used during typical construction activities such as silt, fuel, grease or other chemicals.

The project sponsor would comply with the required SWRCB permit requirements related to dewatering. The RWQCB could require compliance with certain provisions in the permit such as treatment of the flows prior to discharge. The project sponsor would discharge the groundwater generated during dewatering with authorization of and required permits from the applicable regulatory agencies, in this case the San Francisco Bay RWQCB. The project sponsor would comply with applicable permit conditions associated with the treatment of groundwater prior to discharge and if necessary a dewatering collection and disposal method would be identified closer to the Pacheco Creek and marshy areas on the site. The impact would be less than significant.

Mitigation: None required.

Impact G.3: Development of the project would result in a substantial change to drainage patterns and increase in impervious area, thereby increasing stormwater runoff volumes and the likelihood of erosion and flooding downstream. (Less than Significant)

The project would develop approximately 42 acres of area within an approximately 78-acre project site with approximately 36 acres of open undeveloped area. The 42-acre area would consist of 163 single-family homes with lot sizes would ranging from 6,000 square feet to over 15,000 square feet along with internal roadways. The project would also involve substantial change in the topography over the majority of the 78-acre site. The proposed drainage plan (see Figure 4.G-1) would involve extensive grading to create building pads and parking areas. Grading on the western portion of the site (See *Chapter 3, Project Description)* would involve cutting the slope at depths up to 135 feet over an approximately 4.5-acre area. The cut spoils would be used for fill onsite with a maximum depth of approximately 59 feet. The new topography would therefore be substantially different from the existing conditions and would alter the drainage pattern of the project site. The steep slope resulting from the cut slope activity could accelerate peak flows and cause increased erosion and sedimentation downstream, which would cause flooding in Pacheco Creek. However, these adverse effects from the change in drainage pattern would be controlled through implementation of the Stormwater Control Plan as required under the C.3 requirements in the NPDES Permit.

The Stormwater Control Plan (Isakson & Associates, Inc., 2006) proposes installing and maintaining a series of BMPs and source control and treatment measures. The plan includes separating the cut slope with drainage terraces at every 30 feet. The slope and the terraces would terminate in a 20-foot-wide debris bench just upslope from the first tier of residential lots. A series of adjacent BMPs would be installed forming an approximately 11.6 acre-bioretention area on the eastern portion near Pacheco Creek. The marsh and overflow area (Parcel B; see Figure 4.G.1) would provide an additional site retaining area. The Stormwater Control Plan utilizes the differences in elevation to provide for sufficient hydraulic head for swales, biofiltration, or other soil filtration BMPs. The following site design/landscape and treatment measures would be implemented:

Measures to Limit Impervious Areas

Measures to Cluster Development and Protect Natural Resources

- The site would be designed to have separate lots, which would vary from approximately 6,000 to over 15,000 square feet in size.
- The approximately 11.6-acre-open space would provide mostly unpaved open space for recreation.
- The project design includes some street widths configured to reduce the amount of pavement by narrowing the street and eliminating parking on one side.
- The site would be developed with setbacks from existing marsh areas and Pacheco Creek to minimize any impact to existing natural watercourses.

Measures to Limit Directly Connected Impervious Area

- The single-family homes would be in built on individual lots rather than continuous impervious surfaces.
- Because the pervious areas in the developed area may not be self-retaining, a larger bioretention area is proposed (see Figure 4.G-1) that would receive runoff from the lots.
- Any exposed slopes, including slopes along house splits, would be terraced with low retaining walls and/or slopes limited to 4:1 east of E Drive and tributary to the bioretention area. All exposed slopes would be stabilized and vegetated.

Selection and Preliminary Design of Stormwater Treatment BMPs

Runoff from roofs and paved areas on each of the 163 lots and the proposed streets would be collected and conveyed to a series of bioretention treatment BMPs located in the 11.6-acre-open space. A series of bioretention areas would accommodate the runoff from the site, while allowing maintenance access from public streets and the open space. The BMP would have adequate hydraulic head to allow drainage into, through and away from the BMP without pumping. Runoff from the new impervious surfaces would be treated at facilities designed to accommodate 0.2 inch-per-hour storm runoff.

Specific Characteristics of the Tributary Impervious Area and the Bioretention Area

Runoff from the residential lots, driveways, roofs, parking areas and streets would be collected in pipes and conveyed to a series of 31 individual, adjacent bioretention areas located adjacent to the open space at the northeast corner of the site. The bioretention area would be an approximately 128,000-square-foot-irregularly shaped landscaped portion. The area would be designed to dissipate energy from the flows entered through the pipes and to stabilize the adjacent engineered slope to prevent excess sediment from entering the area. In addition, each bioretention area would receive flows from not more than 2-acre tributary area. A retaining wall would be built at the edge of the bioretention area along Pacheco Creek that would enable runoff to flow into the low lying marshy areas and keep flows from entering into the creek. In the central and western portions of the project site, the cutting of the slope would direct the flows from the bioretention

area (shown in Figure 4.G.1) to the south and east. Therefore, the areas draining west of the bioretention area would be limited to Parcel A and the downgradient hilly area.

The bioretention area would be designed and constructed according to the criteria set in the most current CCCWP *Stormwater C.3 Guidebook*.

Source Control BMPs

Source control BMPs would be implemented to control specific sources or activities that affect water quality adversely such as minimizing runoff of excess irrigation water into the stormwater conveyance system and designating areas for washing of equipment and/or vehicles that would be self-contained or equipped with a clarifier or other pre-treatment facility. BMPs would also be installed to control sources such as potential dumping of wash water or other liquids into storm drain inlets.

BMP Operation and Maintenance

The project sponsor would provide any necessary easements or rights of entry to Contra Costa County staff for access and inspection of stormwater BMPs and to make provision of easements or right of entry a condition of sale. The project sponsor would operate and maintain the bioretention areas constructed in connection with the project until the County accepts responsibility or a homeowners' association/ private entity is legally incorporated that would be responsible for maintenance, execution of codes, regulations and agreement. The project sponsor would submit a draft Stormwater Facilities Operation and Maintenance Plan including detailed maintenance requirements and a maintenance schedule. Some of the maintenance activities would include the following:

- inspect inlets for channels, exposure of soils, or other evidence of erosion
- clear obstructions and remove any accumulation of sediment
- inspect outlets for erosion or plugging
- inspect side slopes for evidence of instability or erosion and rectify, as necessary.

Although the project would substantially change the topography and drainage pattern at the project site, regulatory compliance and completion and implementation of the required plans and measures would ensure that the change would not result in increased erosion, siltation and flooding on- or offsite or exceed the capacities of existing or planned storm drainage systems. Further, as discussed previously, the low permeability of the existing clayey soil at the project site allows for lesser infiltration of runoff. Given the implementation of the BMPs and runoff and sediment control measures discussed above, the project would not cause a significant increase in runoff than under current conditions. The impact would be less than significant.

Mitigation: None required.

Cumulative Impacts

The geographic context used for the cumulative assessment of hydrology and water quality impacts is the Walnut Creek watershed in the vicinity of Pacheco Creek. This includes the project site and areas in the immediate vicinity and that drain directly or eventually into Pacheco Creek. County staff identified approved, but not yet completed projects within the vicinity of the project site area. Each of the projects identified for consideration in the cumulative scenario would introduce new residential uses to the project vicinity. They include Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane) and Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard).

Impact G.4: The increased construction activity and new development resulting from the project, in conjunction with other past, present and reasonably foreseeable projects in the area would not result in cumulative impacts with respect to hydrology and water quality. (Less than Significant)

Implementation of the project, with other past, present and reasonably foreseeable future projects in the vicinity would include increases in stormwater runoff and pollutant loading to the Pacheco Creek and Suisun Bay. The project and other projects in the vicinity are required and would be required to comply with the local drainage and grading ordinances intended to control runoff and regulate water quality at each development site. Additionally, new projects would be required to demonstrate that stormwater volumes would be managed by downstream conveyance facilities. New development projects within the County would also be required to comply with the County ordinance regarding stormwater control and water quality and CCCWP NPDES permitting requirements. The Bayview project is one of the larger subdivision development projects in the area and would substantially change the drainage pattern at the currently undeveloped project site. However, the other projects would also be developed mostly on existing undeveloped land. Although the cumulative impact to the drainage pattern may be significant, the change would not be substantial enough to cause downstream siltation, erosion, and flooding (see Impacts G.1 and G.3), therefore the contribution of the project would not be cumulatively considerable

Mitigation: None required.

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H. Land Use and Planning

Introduction

The project site is located within and falls under the jurisdiction of Contra Costa County. Construction and operation of the project would have the potential to conflict with the applicable plans and policies of the County. This chapter analyzes the project's consistency with the current *Contra Costa County General Plan 2005–2020 ("General Plan")*, adopted in January 18, 2005, and the *Contra Costa County Zoning Ordinance* ("*Zoning Code*"), as well as the *65/35 Contra Costa County Land Preservation Plan*. The chapter also describes existing land uses on and in the vicinity of the site and identifies any potential conflicts with those uses that would or could arise from approval of the proposed project. Where potential impacts on existing or planned land uses or conflicts with existing planning documents are identified, measures to mitigate these effects are identified.

Setting

The project site is situated in a low-lying area close to marshes associated with the shoreline of Suisun Bay, in north–central Contra Costa County. The project site is located about 2 miles south of the Carquinez Strait where it opens to Suisun Bay, about 4.5 miles east of Franklin Ridge, and 5 miles north of the Briones Hills. It is located adjacent to I-680, which is a major north–south regional travel corridor linking Santa Clara County to the south with Solano County to the north and providing travel connections between numerous Alameda and Contra Costa County cities. State Highway 4, the major east-west corridor in Contra Costa County, is located about a mile to the south.

The site is situated near the northern end of a continuous belt of urban and suburban development that extends southward for nearly 30 miles, to the City of Pleasanton in central Alameda County. The site, which is east of the City of Martinez and northwest of the City of Concord, is in one of the County's unincorporated communities, referred to as the Vine Hill/Pacheco Boulevard Area. This community is currently developed with roads, trails, the installation of gas pipelines and land uses including a landfill, wastewater treatment facilities and residential areas. The project site is bounded by I-680 and the Contra Costa Canal to the southwest, a residential development on Palms Drive to the northwest, an unpaved portion of Central Avenue separating it from Acme Landfill property to the northeast and east and the Burlington Northern Santa Fe Railroad tracks to the south. The main channel of Pacheco Creek is located 0.5 miles east of the project site, while a tributary to the creek extends into the site, connecting with a wetland pond on the east side of the site (see Figure 3-1, Chapter 3, Project Description)

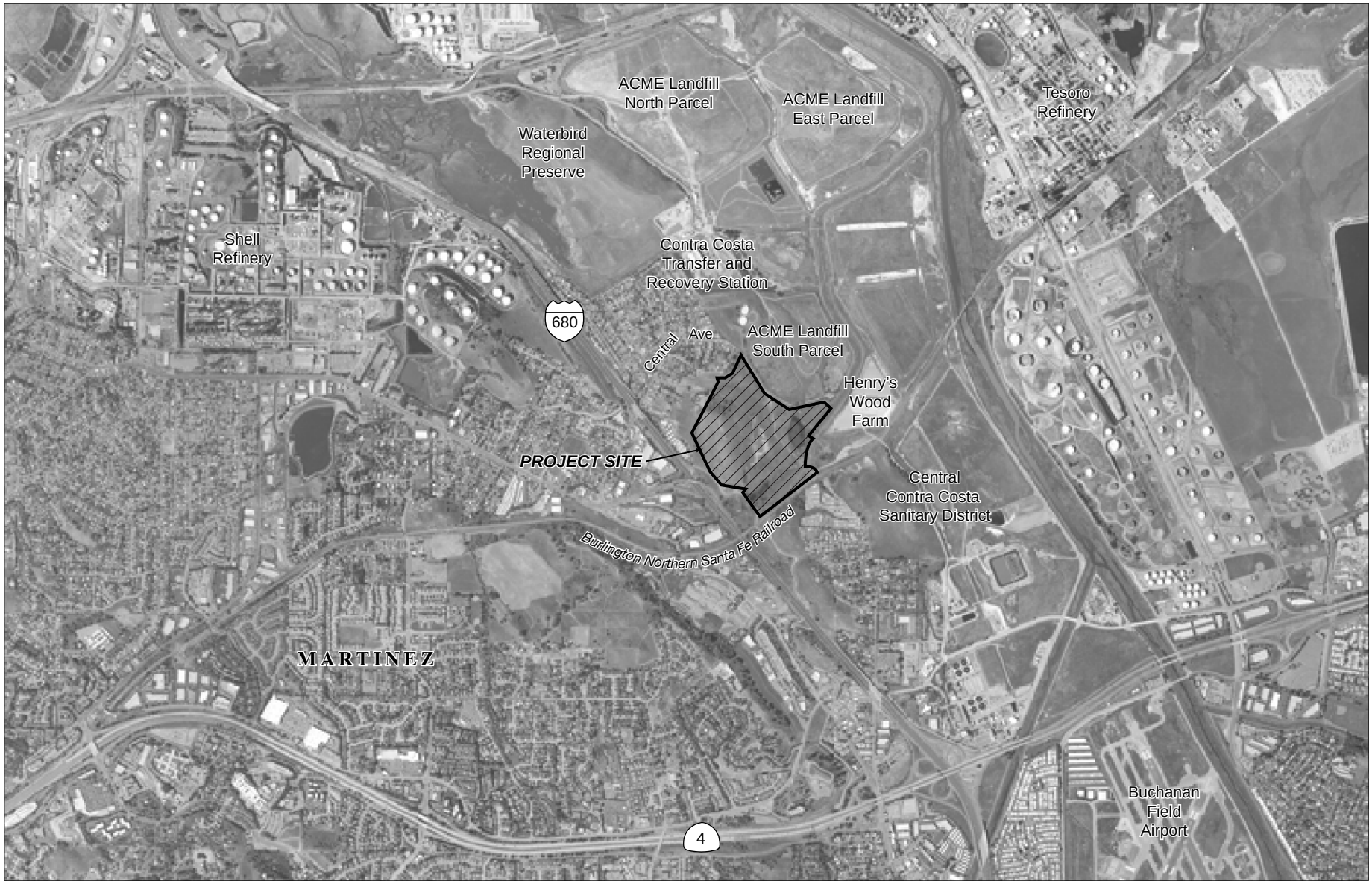
The immediate vicinity of the project site is characterized by a variety of land uses. The I-680 freeway runs in a northwest-southeast direction along the southwest boundary of the project site. The area directly west of the freeway supports a mixture of residential, commercial and light industrial uses. Further west, the land is dominated by residential development including the County's unincorporated Mountain View neighborhood and suburban areas of the City of

Martinez. Parcels immediately northwest of the site and east of the freeway are characterized by a cluster of single family homes on lots ranging in size from approximately 7,000 square feet to one acre. Lands to the northeast, east and south are mostly undeveloped properties zoned and partly used for heavy industrial purposes. The southern boundary of the project site abuts the Burlington Northern Santa Fe Railroad tracks. A combination of undeveloped lands and recreational vehicle storage occupy the area immediately south of the railroad tracks. Along the northern shoreline, further northwest, is the Waterbird Regional Preserve, an approximately 198-acre wetland and associated upland area managed jointly by the East Bay Regional Park District, the Mt. View Sanitary District, the Contra Costa County Mosquito and Vector Control District and the California Department of Fish and Game.

The project site is near a number of major industrial uses located in the region, particularly along or in proximity to the northern shoreline. The majority of the land to the north and northeast of the project site is property of the Acme Landfill. While the landfill is currently mostly inactive, the fully operational Contra Costa Transfer and Recovery Station is located approximately 0.3 miles north of the project site. A former firewood and wood chipping facility abuts the project site to the east. Pipelines carrying crude oil and refined petroleum products (gasoline, diesel fuel and jet fuel) run under Central Avenue and intersect the project site along a wetland area on the northeastern boundary. Mallard Reservoir and Martinez Reservoir, operated as water management facilities by the Contra Costa Water District, are located about 2 miles east and 1.2 miles west of the site, respectively. The Ralph D. Bollman Water Treatment Plant is situated at the southern edge of Mallard Reservoir. The Central Contra Costa Sanitary District's wastewater treatment plant and household hazardous waste collection facilities are located 1 mile southeast of the project. Mt. View Sanitary District's wastewater treatment plant is located about 1 mile to the northwest. In addition, the heavily industrialized land areas supporting Shell Martinez Refinery and the Tesoro Golden Eagle Refinery are located approximately 1 mile northwest and east respectively. The aerial photo shown on **Figure 4.H-1** provides a visual overview of the land uses described in this section.

On–Site Land Uses

For purposes of project review, the project site is more generally described as being bounded on the southwest by I-680, on the northwest by residential development, on the east and northeast by Acme Landfill property and on the south by the Burlington Northern Santa Fe Railroad tracks. The approximately 78-acre project site consists of gently sloping land on the east, rising sharply to the summit of a Vine Hill on the west. Elevations range from 4 to 283 feet above mean sea level ("msl"). The property supports permanent and seasonal wetlands and an extensive band of freshwater marsh across its southern portion. A valley oak woodland covers a small area mid-slope on the north-facing side of Vine Hill. The site is currently undeveloped although scarred from illegal motocross activity. As a part of the Vine Hill/Pacheco Boulevard Area community, the project site falls within the area permitted to be developed in accordance with the voter approved Urban Limit Line as established through adoption of Measure C-1990. The site is currently zoned Heavy Industrial ("H-I") and is designated as Heavy Industry ("HI") in the *General Plan* Land Use Element.



SOURCE: GlobeXplorer; ESA

Bayview Residential Project . 208078

Figure 4.H-1
Aerial Photo of Bayview Project

Regulatory Framework

Contra Costa County General Plan

The project site is located in an unincorporated area of Contra Costa County, and as such, the project is subject to the land use regulations and planning policies promulgated in the *General Plan*, adopted by the Board of Supervisors on January 18, 2005. The *General Plan* covers a planning area of 805 square miles, 732 of which are land (the remainder being water areas), that supports a population of over 1,023,400 (ABAG, 2006). Located in the center of the nine-county San Francisco Bay area, much of Contra Costa County's boundaries are defined by water, including San Francisco and San Pablo bays on the west and the Carquinez Strait, Suisun Bay, Honker Bay, and the Sacramento/San Joaquin River Delta on the north.

Due to its large geographical area and diverse planning needs, the County is divided into six planning subareas, with policy intentions pertaining to the subareas or other geographically specific areas identified in the *General Plan*. The project site is within the North Central County subarea, which encompasses all of the cities and unincorporated communities along the northern I–680 corridor, including the cities of Martinez, Concord, Pleasant Hill, Walnut Creek, and Clayton, and the unincorporated areas of Vine Hill, Pacheco, Clyde, and Saranap. The North Central County area is one of three subareas comprising the larger Central County Area, which had a population of 471,800 people in 2000. The predominant land uses in the suburban Central County Area are residential (primarily low density), commercial, recreation, grazing, and open space. There is also a concentration of industrial uses (e.g., oil refineries) in the northern part of Central County.

The *General Plan* notes that the Central County Area experienced strong residential growth during through the 1980s, but that many of the cities along the I–680 corridor are approaching buildout. Residential growth is expected to continue, but at a reduced rate, and with more focus on high-density and infill development. At least 10,000 new housing units are anticipated in the Central County Area during the planning horizon of the *General Plan* (i.e., through 2020).

The purpose of the *General Plan* is to establish a roadmap for the future growth of the County that defines and preserves a "quality of life" for the County residents. The goals, policies, and implementation measures established by the *General Plan* are intended to guide decisions on future growth, development, and the conservation of resources through the year 2020. The *General Plan* is designed to provide guidance on the development of private and public lands, including infrastructure improvements such as sewers and roadways, and is intended for use by County decision makers as well as other public agencies.

The *General Plan* sets forth hundreds of comprehensive goals, policies, and implementation measures to address issues within the Planning Area related to social, economic, and environmental concerns. The policies are organized into the following nine elements: Land Use, Growth Management, Transportation and Circulation, Housing, Public Facilities/Services, Conservation, Open Space, Safety, and Noise. Each element and each policy was reviewed during preparation of this EIR. The *General Plan* policies relevant to the proposed project are listed

below. The following list does not include every *General Plan* implementation measure that may be relevant to the proposed project. However, to the extent that environmental controls or other features can be imposed on the project to maintain consistency with these County policies, those controls are either part of the project, compulsory as conditions of permits required for the project, or identified as mitigation measures in this EIR. Additional comments on consistency with individual policies are provided below.

Land Use Element

Land Use Designations. The *General Plan* land use map designates the project site as Heavy Industry ("HI"). The Heavy Industry designation allows industrial uses that require large areas of land with convenient truck and rail access. Industrial operations within this land use category may generate substantial noise, pollutants, dust, odors or other hazards or nuisances, rendering them incompatible with residential uses in close proximity. The Heavy Industry category allows a wide variety of industrial uses, including metal working, chemical and petroleum product processing and refining, and heavy equipment operation, among others, as well as all uses permitted within the Light Industry category, such as processing, packaging, fabrication, warehousing, distribution, and similar uses. The Heavy Industry land use category has a floor area ratio (FAR) limit of 0.67, a maximum site coverage of 50 percent, and a height limit of 50 feet.[1]

The proposed project includes a request for an amendment to the *General Plan* to change the land use designation of the site from Heavy Industry to Single–Family Residential—Medium Density (SM). The SM designation is one of eleven residential land use categories established in the *General Plan*, including four single-family residential categories of varying densities. The Single–Family Residential—Medium Density category allows from 3.0 to 4.9 dwelling units per net acre, and individual lots up to 14,519 square feet in size. The principal permitted use in this designation is detached single-family homes and accessory structures. Permitted secondary uses compatible with high-density residential development include home occupations, small residential care and childcare facilities, churches and other similar places of worship, secondary dwelling units, and other uses and structures incidental to the primary uses. Development regulations for residential uses are established in the *Zoning Code*, addressed below. Residential land use policies and other *General Plan* policies applicable to the project also are discussed below.

65/35 Land Preservation Plan. The *65/35 Land Preservation Plan* was incorporated into the *General Plan* when Contra Costa County voters approved Ordinance 82-1 (Measure C – 1990) in 1990. Measure C-1990 requires that not less than 65 percent of the land in the County be preserved for parks, open space, agriculture, wetlands, and other non-urban uses. This standard ensures that both within and outside of the Urban Limit Line ("ULL"), a maximum of not more than 35 percent urban development could occur in the County, irrespective of potential general plan amendments in the future. The policies within the plan are intended to, among other objectives, protect open hillsides and significant ridgelines throughout the County from development and prohibit any changes to the *65/35 Land Preservation Plan* standard except by a

[1] The floor to area ratio (FAR) is the ratio of building floor area to the total site area.

vote of the people. The Ordinance directed the County Board of Supervisors to reflect the 65/35 Land Preservation Plan policies within the *General Plan*.

Urban Limit Line. The purpose of the ULL is to ensure preservation of identified non-urban agricultural, open space, and other areas by establishing a line beyond which no urban land uses can be designated during the term of the *General Plan* and to facilitate the enforcement of the *65/35 Land Preservation Plan* standards. During the term of the *General Plan* (2005-2020), properties that are located outside of the ULL may not obtain general plan amendments that would redesignate them for an urban land use.

General Plan Land Use Element Goals and Policies. The Land Use Element of the *General Plan* includes the following goals and policies that are applicable to the project:

> *Goal* 3-A: To coordinate land use with circulation, development of other infrastructure facilities, and protection of agriculture and open space, and to allow growth and the maintenance of the County's quality of life. In such an environment all residential, commercial, industrial, recreational and agricultural activities may take place in safety, harmony, and to mutual advantage.
>
> *Goal* 3-F: To permit urban development only in locations of the County within identified outer boundaries of urban development where public service delivery systems that meet applicable performance standards are provided or committed.
>
> *Policy 3-5*: New development within unincorporated areas of the County may be approved, providing growth management standards and criteria are met or can be assured of being met prior to the issuance of building permits in accordance with the growth management.
>
> *Policy 3-6*: Development of all urban uses shall be coordinated with provision of essential Community services or facilities including, but not limited to, roads, law enforcement and fire protection services, schools, parks, sanitary facilities, water, and flood control.
>
> *Policy 3-7*: The location, timing and extent of growth shall be guided through capital improvements programming and financing (i.e., a capital improvement program, assessment districts, impact fees, and developer contributions) to prevent infrastructure, facility and service deficiencies.
>
> *Policy 3-8*: Infilling of already developed areas shall be encouraged. Proposals that would prematurely extend development into areas lacking requisite services, facilities, and infrastructure shall be opposed. In accommodating new development, preference shall generally be given to vacant or under-used sites within urbanized areas, which have necessary utilities installed with available remaining capacity, before undeveloped suburban lands are utilized.
>
> *Policy 3-11*: Urban uses shall be expanded only within a ULL where conflicts with the agricultural economy will be minimal.
>
> *Policy 3-21:* The predominantly single family character of substantially developed portions of the County shall be retained. Multiple-family housing shall be dispersed throughout the County and not concentrated in single locations. Multiple-family

housing shall generally be located in proximity to facilities such as arterial roads, transit corridors, and shopping areas.

Policy 3-27: Existing residential neighborhoods shall be protected from incompatible land uses and traffic levels exceeding adopted service standards.

Policy 3-28: New residential development shall be accommodated only in areas where it will avoid creating severe unmitigated adverse impacts upon the environmental and upon the existing community.

Policy 3-29: New housing projects shall be located on stable and secure lands or shall be designed to mitigate adverse or potentially adverse conditions. Residential densities of conventional construction shall generally decrease as the natural slope increases.

General Plan Land Use Element Policies Specific to Vine Hill/Pacheco Boulevard Area. The Land Use Element of the *General Plan* also includes the following policies applicable to the project:

Policy 3-101: The scenic assets and unstable slopes of the Vine Hill Ridge are to be protected for open space/agricultural use.

Policy 3-102: The residential neighborhood east of I-680 shall be buffered from the industrial/land fill-related uses.

General Plan Growth Management Element Standards. The Growth Management Element of the *General Plan* sets forth the following performance standards that are applicable to the project:

Traffic: All new development shall meet the traffic level of service performance standards prior to county approval (see Section 4.L, *Transportation and Traffic,* for a detailed description of these standards)

Water Service: The County … shall require new development to demonstrate that adequate water quantity and quality can be provided.

Sanitary Sewer: The County … shall require new development to demonstrate that adequate sanitary sewer quantity and quality can be provided.

Fire Protection: Fire stations shall be located within one and one-half miles of developments in urban, suburban and central business district areas. Automatic fire sprinkler systems may be used to satisfy this standard.

Public Protection: A Sheriff facility standard of 155 square feet of station area and support facilities per 1,000 population shall be maintained within the unincorporated are of the County.

Parks and Recreation: Neighborhood parks: 3 acres required per 1,000 population.

Floor Control and Drainage: Major new development shall finance the full costs of drainage improvements necessary to accommodate peak flows due to the project. For mainland areas along rivers and bays, it must be demonstrated that adequate protection exists through levee protection or change of elevation prior to development.

General Plan Conservation Element Goals and Policies. The Conservation Element of the *General Plan* includes the following goals and policies that are applicable to the project:

> *Goal 8-D:* To protect ecologically significant lands, wetlands, plant and wildlife habitats.
>
> *Goal 8-T:* To conserve, enhance, and manage water resources, protect their quality, and assure an adequate long-term supply of water for domestic, fishing, industrial, and agricultural use.
>
> *Policy 8-6:* Significant trees, natural vegetation, and wildlife populations generally shall be preserved.
>
> *Policy 8-12:* Natural woodlands shall be preserved to the maximum extent possible in the course of land development.
>
> *Policy 8-14:* Development on hillsides shall be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion. Development on open hillsides and significant ridgelines throughout the County shall be restricted, and hillsides with a grade of 26 percent or greater shall be protected through implementing zoning measures and other appropriate actions.
>
> *Policy 8-21:* The planting of native trees and shrubs shall be encouraged in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are sustained in urban areas.
>
> *Policy 8-27:* Seasonal wetlands in grassland areas of the County shall be identified and protected.
>
> *Policy 8-67:* Lands having a prevailing slope above 26 percent shall require adequate special erosion control and construction techniques.
>
> *Policy 8-74:* Preserve watersheds and groundwater recharge areas by avoiding the placement of potential pollution sources in areas with high percolation rates.
>
> *Policy 8-75:* Preserve and enhance the quality of surface and groundwater resources.
>
> *Policy 8-91:* Grading, filling, and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.
>
> *Policy 8-87:* Onsite water control shall be required of major new developments so that no increase in peak flows occurs relative to the site's pre-development condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts.

General Plan Open Space Element Policies. The Open Space Element of the *General Plan* includes the following policies that are applicable to the project:

> *Policy 9-14:* High quality engineering of slopes shall be required to avoid soil erosion, downstream flooding, slope failure, loss of vegetative cover, high

maintenance costs, property damages and damages to visual quality. Particularly vulnerable areas should be avoided for urban development. Slopes of 26 percent or more should generally be protected and are generally not desirable for conventional cut-and-fill pad development. Development on open hillsides and significant ridgelines shall be restricted.

Policy 9-15: In order to conserve the scenic beauty of the County, developers shall generally be required to restore the natural contours and vegetation of the land after grading and other land disturbances. Public and private projects shall be designed to minimize damages to significant trees and other visual landmarks.

Policy 9-17: Extreme topographic modification, such as filling in canyons or removing hilltops, shall be avoided. Clustering and planned unit development approaches to development shall be encouraged. All future development plans, whether large or small scale, shall be based on identifying safe and suitable sites for buildings, roads and driveways. Exemptions to this policy are appropriate for mining, landfill, and public projects in open space areas.

Policy 9-22: When development is permitted to occur on hillsides, structures shall be located in a manner which is sensitive to available natural resources and constraints.

Policy 9-24: Any new development shall be encouraged to generally conform with natural contours to avoid excessive grading.

Policy 9-39: To achieve a level of park facilities of four acres per 1,000 population.

In addition to the above, applicable goal and policies included in the Transportation and Circulation, Housing, Public Facilities/Services, Safety and Noise elements of the General Plan and listed in the appropriate sections of this EIR.

Contra Costa County Zoning Ordinance

The *Contra Costa Zoning Ordinance* ("*Zoning Code*") regulates land use and development of land within the County. The *Zoning Code* includes identification of allowed land uses, development standards (e.g., lot size, building height, setbacks, etc.), parking requirements, and the placement of signs. The project site is located in a Heavy Industrial ("H-I") zoning district which allows for a range of industrial and manufacturing uses including, the manufacturing or processing of petroleum, lumber, steel, chemicals, explosives, fertilizers, gas, rubber, paper, cement, sugar, and all other industrial or manufacturing products. Land uses permitted in the Light Industrial zoning district are also permitted in the H-I distinct with a land use permit. There are no lot area, height, or side yard regulations or limitations in the H-I district.

The project includes a request for a zoning reclassification to Planned Unit District ("P-1"). Permitted uses within the P-1 district include detached single-family dwellings on legally established lots and associated auxiliary structures and uses. The lot standards of this P-1 district would generally be consistent with the R-6district. In the R-6 district, structures are limited to two and one half stories or 35 feet in height. Lots are required an aggregate side yard width of 15 feet with no side yard less than 5 feet wide. Front yard setbacks have a required minimum of 20 feet. Each unit is required to provide two off-street automobile storage spaces on the same lot. The

applicant is proposing a P-1 zoning designation because the R-6 zoning district is not compatible with a SM General Plan designation, and therefore a P-1 zoning designation is required.

In addition to land use zoning, the *Zoning Code* includes a tree protection and preservation ordinance, which provides for the preservation of certain protected trees on public and private properties in the unincorporated area of this county by controlling tree removal. Protected trees include native oak trees with a trunk diameter of 6.5 inches or larger.

Impacts and Mitigation Measures

Significance Criteria and Analysis Methodology

The CEQA *Guidelines* Appendix G provides guidance for assessing the significance of potential environmental impacts. Relative to land use, a project will normally have a significant effect on the environment if it would:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

The analysis of land use impacts for the project addresses the issues of land use compatibility and consistency with adopted land use plans and policies. The analysis of project impacts related to land use compatibility is based on an assessment of the land use patterns and characteristics in the surrounding area. Factors such as incompatible land uses, relationships to existing land uses, and the projects proposed grading plan, were considered in the analysis. Aerial photographs and land use maps, along with a site visit, were used to conduct this analysis. The analysis with regard to consistency with land use plans is based upon a review of the aforementioned policies and plans that are applicable to the project and the project site.

There are no habitat conservation plans or natural community conservation plans applicable to the project; therefore this issue is not discussed further in this EIR.

Impacts

Impact H.1: The project would result in new land uses on previously undeveloped land that would be incompatible with some surrounding land uses. (Significant)

The project would result in the development of 163 low-density residential units on lots ranging in size from approximately 6,000 to over 15,000 square feet. Although the project would introduce new residential land uses on the site, the project would not fundamentally alter the predominantly low-density residential character of the Vine Hill/Pacheco Boulevard Area. The

project site is nearly surrounded by residential uses that occupy lands within 0.5 miles of the site to the northwest, west, south and southeast. The nearest residential uses abut the project site to the north and are primarily single-family dwellings. Overall, the project would not physically divide an established community.

However, as noted above, the project site is near a number of major industrial uses including the Acme Landfill, the Contra Costa Transfer and Recovery Station, water and wastewater treatment plants and two refineries. The Central Contra Costa Sanitary District's wastewater treatment plant and household hazardous waste collection facility is located 1 mile southeast of the project. There are residential neighborhoods located to the north and northeast of the project. The project would include a zoning reclassification and *General Plan* amendment to change the zoning and land use designations from industrial to residential. Since residential uses are typically more sensitive to odors, dust and noise associated with industrial operations, the introduction of residential uses into an area that is industrial in character would result in potential land use relationship conflicts between the project uses and off-site industrial uses nearby. Due to the site's proximity to the Shell Martinez Refinery, Tesoro Refinery, the Central Contra Costa Sanitary District site, the Burlington North Santa Fe Railroad tracks and the Acme Landfill as well as the proposed orientation of the residential structures on the south and east facing slopes of Vine Hill, it is impossible to create a sufficient buffer zone between the project and industrial uses. Thus, no feasible mitigation is available and the project's impact with respect to compatibility with surrounding land uses would remain significant and unavoidable.

Significance: Significant and Unavoidable.

Impact H.2: Implementation of the project, including the proposed amendment to the *General Plan* and zoning reclassification, would result in changes in land uses within the Vine Hill/Pacheco Boulevard Area and would conflict with adopted applicable land use plans and policies. (Significant)

The proposed project would develop a total of 163 single-family detached homes and internal roadways on 42 acres, and two open space parcels of approximately 11.6 and 15 acres. The project also would include a hilltop of approximately 10 acres which would remain undeveloped. Basic infrastructure (i.e., roads and utilities) would be extended on to the project site to provide adequate residential services, which would support the proposed changes in land use.

The project, including the zoning reclassification, new land use designation and language changes to Land Use Element Policy 3-101 through an amendment to the *General Plan*, would be consistent with most of the land use plans and policies that are applicable to the site. Policies with which the project would fundamentally conflict include those that encourage preservation of the natural topography of existing hillsides and ridgelines and associated visual assets and policies that discourage extensive grading. A detailed discussion of project consistency with applicable plans and policies is provided below.

Consistency with General Plan Land Use Designations and Zoning

Since existing *General Plan* land use designation and zoning for the site would not allow the residential use proposed by the project, the project would include a *General Plan* amendment and rezoning for the project site. As noted above, the project would include changes in the zoning to replace existing zoning classification of Heavy Industrial with Planned Unit District ("P-1"). The proposed *General Plan* amendment would change land use designation on the site from Heavy Industry to Single Family Residential-Medium Density ("SM"). The project would comply with the requirements of the proposed zoning, including permitted land use, density and lot size. The project also would comply with the land use requirements of the proposed *General Plan* land use designation. The change in the land use designation and the rezoning that would occur as part of the project would result in a loss of land zoned for heavy industrial use on the project site. The new zoning, like the proposed *General Plan* amendment, would result in land uses that are internally consistent (within the project site) and that would also be compatible with the surrounding residential land uses. While rezoning of the project site from industrial to residential use would preclude future industrial uses from being developed on the site, such policy decisions would be weighed by decision-makers in the overall decision to approve or deny the proposed project. To the extent that adverse physical land use changes would occur as part of the proposed *General Plan* amendment and rezoning, such impacts are discussed in their respective sections of this EIR.

The project would include a request for an amendment to the *General Plan* to change the language of Policy 3-101 to the following:

> *Policy 3-101:* The scenic assets will, in some measure, be preserved while still allowing safe, feasible development of the property. Grading of these scenic assets shall be permitted to allow for development granted that the scenic remainder parcels are to be protected for open space/agricultural use.

Although the project would introduce residential uses in close proximity to industrial and landfill-related uses, it would not expand existing industrial uses and therefore would not disrupt any existing buffer protecting the existing residential neighborhood from these uses. As such, the project is not considered to be in conflict with Policy 3-102.

The project would involve removal of a valley oak woodland, including 34 native oak trees that fit the criteria for a "Protected Tree" as defined in the *Zoning Code*. Because the *Zoning Code*, which implements the *General Plan*, expressly provides for removing protected trees with the permit approval process specified in Division 816 of the Code, and because a collective tree permit for the site would be considered as a part of the Vesting Tentative Map approval process, the project is not considered to be in conflict with Policies 8-6 and 8-12.

Consistency with the Contra Costa County General Plan

65/35 Land Preservation Plan (Measure C - 1990)

The project site is within the County's ULL and would not violate the 65/35 Land Preservation standard. However, the Hillside Protection Policy included within the plan states that "Development on open hillsides and significant ridgelines throughout the County shall be

restricted, and hillsides with a grade of 26% or greater, shall be protected through implementing zoning measures and other appropriate actions." The project would result in extensive grading over the majority of the project site, including portions with 26 percent grade. As such, the project would conflict the *65/35 Land Preservation Plan*.

Land Use Element

The project would be inconsistent with the following Land Use policies:

Land Use Element

Policy 3-28: The project, as proposed, would result in unmitigated environmental impacts related to land use policies and aesthetics and therefore would conflict with Policy 3-28. See Section 4.A, *Aesthetics* and below for further discussion of these significant and unavoidable impacts.

Transportation and Circulation Element

Policy 5-43: The grading plan proposes to alter the natural topography on the site and lower the peak elevation of Vine Hill by approximately 30 feet to roughly 250 feet above mean sea level. As such, the project would not protect the natural topographic features, aesthetic views, vistas, hills and prominent ridgelines along the I-680. See Section 4.A, *Aesthetics* for a detail discussion of views and vistas.

Conservation Element

Policy 8-14: The project would develop the open hillside and prominent ridgeline of Vine Hill. The steep slopes of Vine Hill with a grade of 26 percent or greater cover most of the western portion of the project site. The project would result in extensive grading over the majority of the project site, including portions with 26 percent grade. In addition, the hillside development would remove the existing natural vegetation including the oak woodland forest. For these reasons, the project can be considered in conflict with the provisions of Policy 8-14.

Open Space Element

Policy 9-17: The project would include extensive grading that would substantially alter the existing topography of the project site. Grading would consist of a cut slope covering an area of approximately 4.5 acres. The residual fill would be placed along the southern and eastern perimeters of the project site. Over the full project site, the maximum fill elevation would be approximately 59 feet and the maximum cut elevation would reach approximately 135 feet. The proposed grading plan would conflict with Policy 9-17.

Safety Element

Policies 10-28 and 10-29: The project would include extensive grading on a very steep hillside with a grade of 26 percent and greater. The project also would include 163 single-family houses in a relatively uniform density on 42 acres of the 78-acre project site. The project would not protect the hillside nor would the lot density conform to slope increases and decreases. Therefore, the project would conflict with Policies 10-28 and 10-29.

It is possible for a project to conflict with specific policies while maintaining consistency with the intent and overarching goals of the *General Plan* in an overall planning context. However, the project as proposed would fundamentally conflict with the intent of *General Plan* policies relating to preservation of the natural topography and visual assets of existing hillsides and ridgelines as well as policies that discourage extensive grading. As such, the project would directly conflict with *General Plan* Policy 3-28 by resulting in unmitigated environmental impacts related to land use policies and aesthetics. Therefore, project approval would require amendments to the *General Plan* to resolve such conflicts.

As noted above in the Regulatory Framework, Measure C – 1990 mandated that the *65/35 Land Preservation Plan* policies be reflected in the *General Plan* and thereby become official policy of the County. *General Plan* Policies 5-43, 8-14, 9-17, 9-24, 10-28 and 10-29 each reflect either the language and/or intent of the Hillside Protection Policy as stated in Measure C – 1990. Because these policies represent aspects of a voter approved measure, and because general plan amendments must be found to be "in the public interest" (California Government Code Section 65358(a)), it would be speculative to assume that such an extensive proposal to amend the *General Plan* would be recommended or approved. Further, should a *General Plan* amendment revise these policies such that a consistency finding for the project could be achieved, the project would remain in conflict with Measure C – 1990. Given the above, it is not anticipated that the project's conflicts with the above mentioned *General Plan* policies and Measure C – 1990 would be resolved without fundamental changes in the nature of the project. Thus, no further mitigation is available, and the project's inconsistency with the *General Plan* and the *65/35 Land Preservation Plan* (Measure C – 1990) would represent a significant and unavoidable impact.

Significance after Mitigation: Significant and Unavoidable.

Cumulative Impacts

Impact H.3: The proposed project, together with other developments in the immediate vicinity, would not physically divide an established community, and would not result in cumulative impacts with respect to applicable land use regulations, or existing uses. (Less than Significant)

County staff identified approved, but not yet completed projects within the vicinity of the project site area. Each of the projects identified for consideration in the cumulative scenario would introduce new residential uses to the project vicinity. They include Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane) and Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard).

Although the project would result in significant and unavoidable impacts resulting from incompatible land uses and conflicts with plans and policies, future new development within the area would be subject to development guidance contained within the *General Plan.* Therefore, it is not anticipated that the proposed project, when considered with other foreseeable development in the area, would result in a cumulative impact with respect to land use and planning.

Mitigation: None required.

References – Land Use and Planning

Association of Bay Area Governments (ABAG), *Projections 2007*, December 2006.

Contra Costa County, *Contra Costa County General Plan 2005 – 2020*, January 18, 2005.

Contra Costa County, official website, *Contra Costa County Zoning Ordinance*, http://www.ordlink.com/codes/ccosta/_DATA/TITLE08/index.html, accessed September 9, 2008.

I. Noise

Introduction

This section presents information on ambient noise conditions in the vicinity of the project site, describes the regulatory framework applicable to the project and identifies potential impacts associated with noise due to construction and operation of the project. The section identifies noise impacts of the project on existing sensitive receptors in the project vicinity as well as the impacts of the existing ambient noise environment on the future residents of the project site. Mitigation measures have been identified to address any significant impacts. Background information on environmental acoustics, including definitions of terms commonly used in noise analysis, is also provided.

Setting

Noise Background

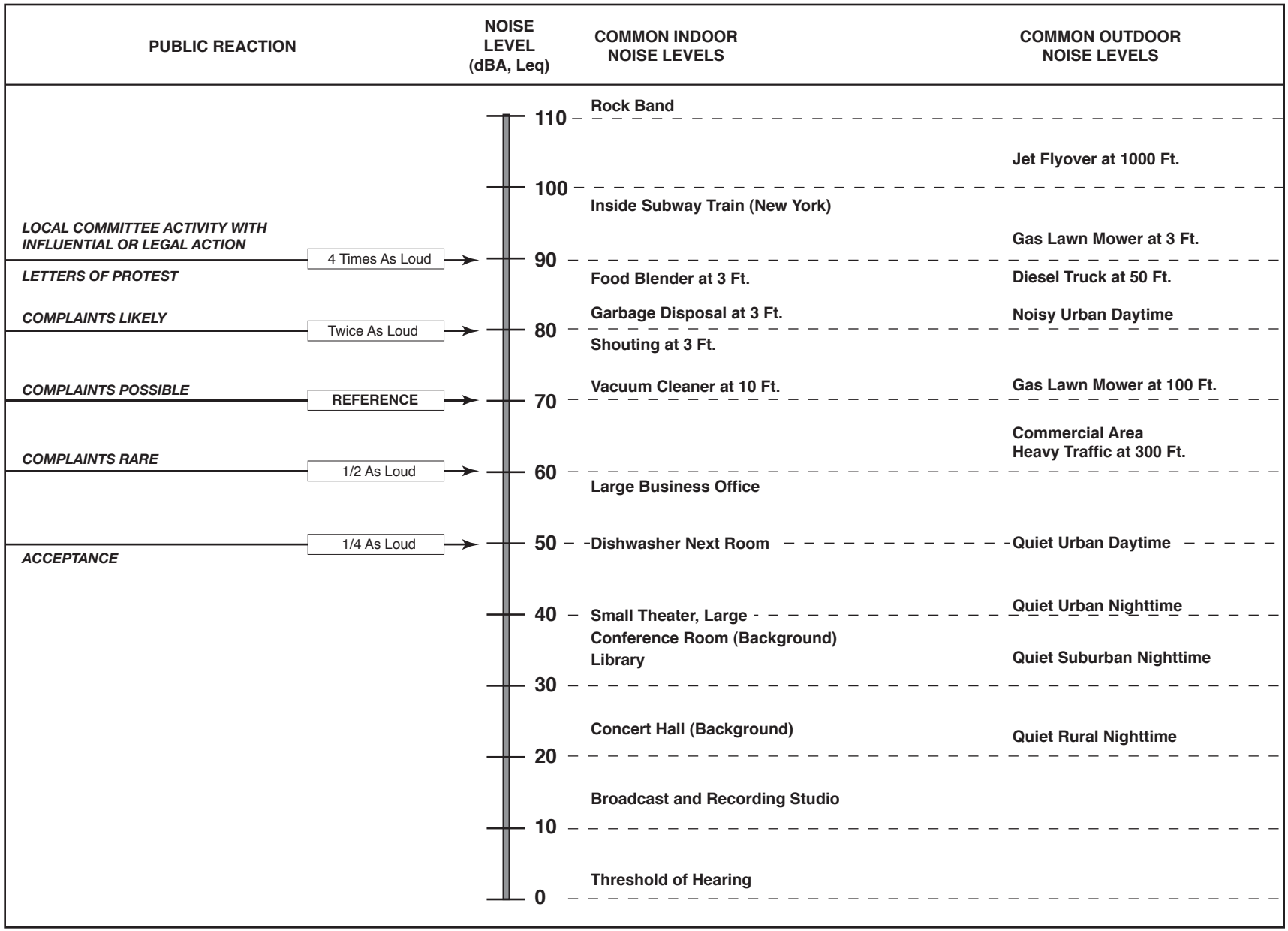
Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequency spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Some typical A-weighted sound levels are presented in **Figure 4.I-1**.

Noise Exposure and Community Noise

An individual's noise exposure is a measure of the noise experienced by the individual over a period of time. A noise level is a measure of noise at a given instant in time. However, noise levels rarely persist consistently over a long period of time. In fact, community noise varies



SOURCE: Caltrans Transportation Laboratory Noise Manual, 1982; and modification by ESA

Bayview Residential Project . 208078

Figure 4.I-1
Effects of Noise on People

continuously with time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. Background noise levels change throughout a typical day, but do so gradually, corresponding with the addition and subtraction of distant noise sources and atmospheric conditions. The addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens) makes community noise constantly variable throughout a day.

These successive additions of sound to the community noise environment vary the community noise level from instant to instant requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: The equivalent sound level is used to describe noise over a specified period of time, in terms of a single numerical value. The L_{eq} is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_{max}: The instantaneous maximum noise level measured during the measurement period of interest.

L_{dn}: The day-night noise level or the energy average of the A-weighted sound levels occurring during a 24-hour period and which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 PM and 7:00 AM is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL: Similar to the DNL the Community Noise Equivalent Level (CNEL) adds a 5-dBA "penalty" for the evening hours between 7:00 PM and 10:00 PM in addition to a 10-dBA penalty between the hours of 10:00 PM and 7:00 AM

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- *Interference with activities such as speech, sleep and learning* – The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors, the thresholds are about 15 dBA higher. Interior residential standards for multi-family dwellings are set by the State of California at 45 DNL. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses.

- *Subjective effects of annoyance, nuisance and dissatisfaction* – Based on attitude surveys used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas, the main causes for annoyance are interference with speech, radio and television, house vibrations and interference with sleep and rest. The DNL as a measure has been found to provide a valid correlation of noise level and the percentage of people annoyed. Three aspects of community noise are most important in

determining subjective response – the level of sound, the frequency composition or spectrum of the sound and the variation of sound level with time.

- *Physiological effects such as hearing loss or sudden startling* – While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise, but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise.

Environmental noise typically produces effects in the first two categories. Workers at industrial plants often experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in the individual thresholds of annoyance and different tolerances to noise tend to develop based on an individuals past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way the new noise compares to the existing noise levels to which one has adapted: the so called “ambient noise” level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference when the change in noise is perceived but does not cause a human response;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness and can cause an adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. A ruler is a *linear* scale: it has marks on it corresponding to equal quantities of distance. One way of expressing this is to say that the ratio of successive intervals is equal to one. A *logarithmic* scale is different in that the ratio of successive intervals is not equal to one. Each interval on a logarithmic scale is some common factor larger than the previous interval. A typical ratio is 10, so that the marks on the scale read: 1, 10, 100, 1,000, 10,000, etc., doubling the variable plotted on the x-axis. The human ear perceives sound in a non-linear fashion; hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather they combine logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Sound level naturally decreases as one moves further away from the source. This basic attenuation rate is referred to as the *geometric spreading loss*. The basic rate of geometric spreading loss depends on whether a given noise source can be characterized as a point source or a line source. Point sources of noise, including stationary mobile sources such as idling vehicles or onsite construction equipment, attenuate (lessen) at a rate of 6.0 dBA per doubling of distance from the source. In many cases, noise attenuation from a point source increases by 1.5 dB from 6.0 dB to 7.5 dB for each doubling of distance due to ground absorption and reflective wave canceling. These factors are collectively referred to as *excess ground attenuation*. The basic geometric spreading loss rate is used where the ground surface between a noise source and a receiver is reflective, such as parking lots or a smooth body of water. The excess ground attenuation rate (7.5 dB per doubling of distance) is used where the ground surface is absorptive, such as soft dirt, grass, or scattered bushes and trees. Widely distributed noises such as a street with moving vehicles (a “line” source) would typically attenuate at a lower rate of approximately 3.0 dB for each doubling of distance between the source and the receiver. If the ground surface between source and receiver is absorptive rather than reflective, the nominal rate increases by 1.5 dB to 4.5 dB for each doubling of distance. Atmospheric effects, such as wind and temperature gradients, can also influence noise attenuation rates from both line and point sources of noise. However, unlike ground attenuation, atmospheric effects are constantly changing and difficult to predict.

Trees and vegetation, buildings and barriers reduce the noise level that would otherwise occur at a given receptor distance. However, for a vegetative strip to have a noticeable effect on noise levels, it must be dense and wide. For example, a stand of trees must be at least 100 feet wide and dense enough to completely obstruct a visual path to the roadway to attenuate traffic noise by 5 dB (Caltrans, 1998). A row of structures can shield more distant receivers depending upon the size and spacing of the intervening structures and site geometry. Generally, for an at-grade highway in an average residential area where the first row of houses cover at least 40 percent of the total area, the reduction provided by the first row of houses is approximately 3 dB and 1.5 dB for each additional row (Caltrans, 1998). Similar to vegetative strips discussed above, noise barriers, which include natural topography and soundwalls, reduce noise by blocking the line of sight between the source and receiver. Generally, a noise barrier that breaks the line of sight between source and receiver will provide at least a 5-dB reduction in noise.

Existing Ambient Noise Environment at the Project Site

The project site is located south of Central Avenue and east of I-680, in the Vine Hill/ Pacheco Boulevard Area of unincorporated Contra Costa County. The major noise sources in the project area are traffic on I-680, train activity along the Burlington North Santa Fe Railroad tracks abutting the southern border of the site, aircraft over flights from Buchanan Field Airport located approximately 1 mile south of the site, truck activity associated with the waste transfer station at Acme landfill located to the north/northeast.

Illingworth & Rodkin, Inc. conducted an environmental noise assessment for the project in May 2005. As part of the assessment, one long-term measurement was conducted over a period of four consecutive days (Thursday, May 12, 2005, to Monday, May 16, 2005) at a location that was considered representative of the noise exposure of the project lots closest to I-680 and the railroad to the south. The measurement location is shown in **Figure 4.I-2**. The monitored data consistently showed that daytime noise levels typically range from 65 to 67 dBA. The DNL at the measurement location was 69 dBA on each of the four days.

ESA conducted two additional long-term (24 hour) noise measurements at the site starting on April 30, 2008, with a Metrosonics sound meter. These noise measurement locations are also shown in Figure 4.I-2. A summary of the measured noise levels and the noise sources affecting the measurements at different locations is shown in **Table 4.I-1**.

TABLE 4.I-1
AMBIENT NOISE LEVELS IN THE STUDY AREA

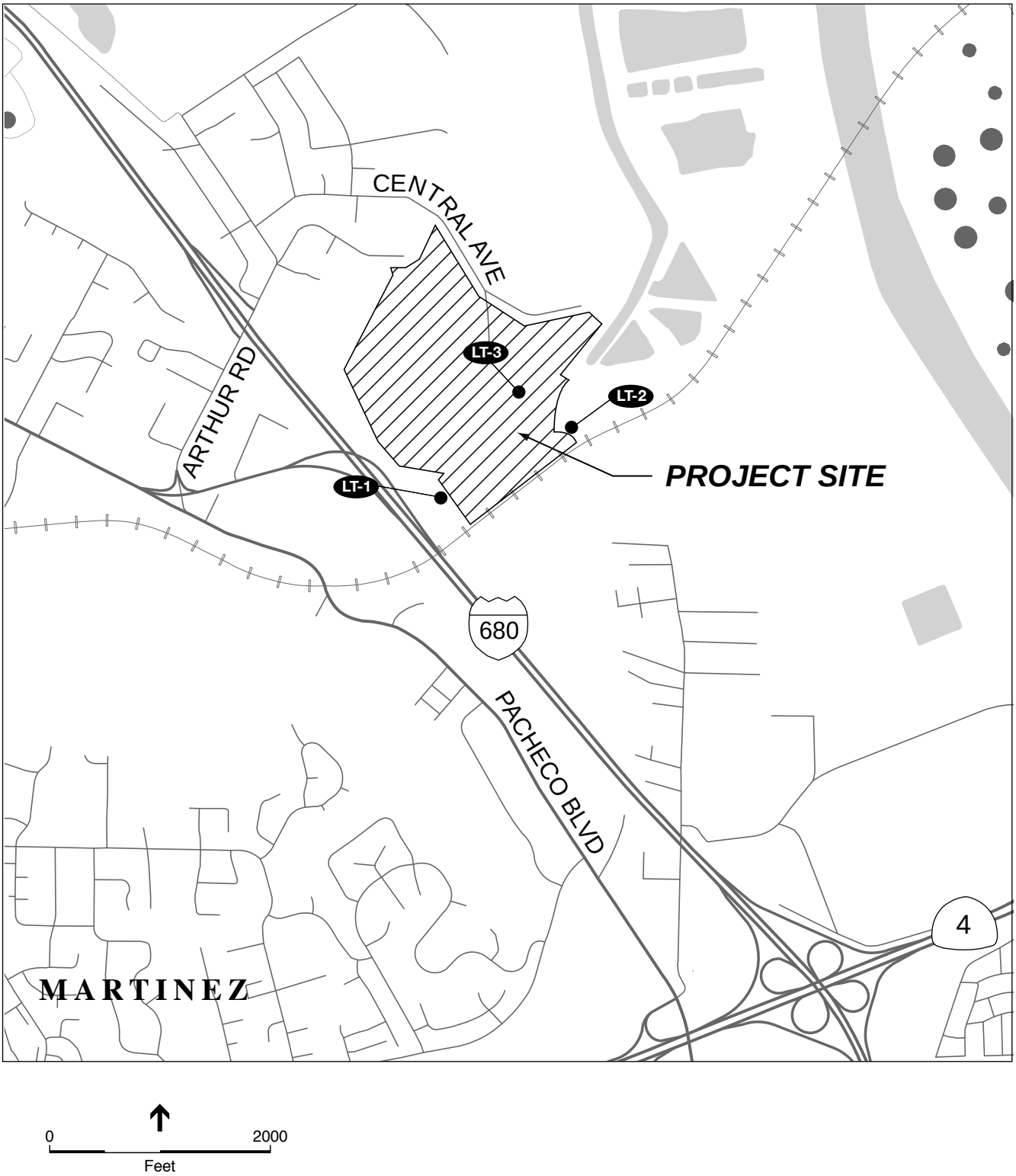
Measurement Location	Duration	DNL, dBA	Hourly Leq Range, dBA	Hourly Lmax Range, dBA	Sources
LT-1	4 days	69	55.6 – 67.6	NA	Traffic on I-680 and railroad activity
LT-2	24 hours	68.9	42.6 – 71.8	52.1 - 101	Railroad activity, wind, birds and other natural sources
LT-3	24 hours	63.4	46.4 - 62.7	59.2 - 91.1	Traffic on I-680, railroad activity, wind, birds and other natural sources

SOURCE: Illingworth & Rodkin, Inc., 2005; Environmental Science Associates, 2008.

Sensitive Receptors

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration and communication and can cause physiological and psychological stress and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals and nursing homes are considered to be the most sensitive to noise. Facilities such as churches, libraries and cemeteries, where people tend to pray, study and/or contemplate are also sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive.

The project site is bounded by I-680 and the Contra Costa Canal to the southwest, a residential development on Palms Drive to the northwest, a Central Avenue separating it from Acme Landfill property to the east and northeast and the Burlington North Santa Fe Railroad tracks to the south. I-680 runs in a northwest-southeast direction along the southwest boundary of the project site. Containers used for a self-storage business separate a portion of the project from I-680 to the west. The area to the northwest of the site and east of the freeway is characterized by



SOURCE: ESA

Bayview Residential Project . 208078

Figure 4.I-2
Noise Monitoring Locations

a cluster of single-family homes. Further northwest is the Waterbird Regional Preserve. Lands to the northeast, east and south are mostly undeveloped properties zoned and partly used for heavy industrial purposes. A combination of undeveloped lands and recreational vehicle storage occupy the area immediately south of the railroad tracks. The majority of the land to the north and northeast of the project site is property of the Acme Landfill. While the landfill is currently mostly inactive, a fully operational refuse transfer station is located approximately 0.3 miles north of the project site. The firewood and wood chipping facility, which abuts the project site to the east, is no longer active. Therefore, the nearest sensitive receptors that could be affected by activities at the project site are the single-family residences in the residential development on Palms Drive to the northwest of the project site.

Regulatory Framework

Federal, state and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies. Local regulation of noise involves implementation of general plan policies and noise ordinance standards. Local general plans identify general principles intended to guide and influence development plans; local noise ordinances establish standards and procedures for addressing specific noise sources and activities. Noise issues relevant to the project are addressed in Title 24 of the California Code of Regulations, *Contra Costa County General Plan* ("*General Plan*") policies and Noise Ordinance standards.

State of California

State regulations include requirements for the construction of new hotels, motels, apartment houses and dwellings (other than detached single-family dwellings, such as are proposed for development on the project site) that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are collectively known as the California Noise Insulation Standards and are found in California Code of Regulations, Title 24 (known as the Building Standards Administrative Code). As noted previously, interior residential standards for multi-family dwellings are set by the State of California at 45 DNL. Title 24 standards are enforced through the building permit application process in Contra Costa County, as in most jurisdictions.

County

Local Plans and Policies

Contra Costa County General Plan

The Noise Element of the *General Plan* contains goals and policies to reduce or eliminate the effects of excessive noise in the community. The County also strives to ensure that new developments will be constructed to limit the effects of exterior noise on the residents, at the same time recognizing the economic impacts of noise control and encouraging an equitable distribution of these costs.

The *General Plan Noise Element* contains the following goals and policies that would apply to the project:

> *Goal 11-A:* To improve the overall environment in the County by reducing annoying and physically harmful levels of noise for existing and future residents and for all land uses.
>
> *Goal 11-B:* To maintain appropriate noise conditions in all areas of the County.
>
> *Goal 11-C:* To ensure that new developments will be constructed so as to limit the effects of exterior noise on the residents.
>
> *Policy 11-1:* New projects shall be required to meet acceptable exterior noise level standards as established in the Noise and Land Use Compatibility Guidelines (shown in Table 4.I-2). These guidelines, along with the future noise levels shown in the future noise contours maps, should be used by the County as a guide for evaluating the compatibility of "noise sensitive" projects in potentially noisy areas.
>
> *Policy 11-2:* The standard for outdoor noise levels in residential areas is a DNL of 60 dBA. However, a DNL of 60 dB or less may not be achievable in all residential areas due to economic or aesthetic constraints. One example is small balconies associated with multi-family housing. In this case, second and third story balconies may be difficult to control to the goal. A common outdoor use area that meets the goal can be provided as an alternative.
>
> *Policy 11-3:* If the primary noise source is train passbys, then the standard for outdoor noise levels in residential areas is a DNL of 70 dB. A higher DNL is allowed since the DNL is controlled by a relatively few number of train passbys that are disruptive outdoors only for short periods. Even though the DNL may be high, during the majority of the time, the noise level will be acceptable.
>
> *Policy 11-4:* Title 24, Part 2, of the California Code of Regulations requires that new multiple-family housing projects, hotels and motels exposed to a DNL of 60 dB or greater have a detailed acoustical analysis describing how the project will provide an interior DNL of 45 dB or less. The County also shall require new single-family housing projects to provide for an interior DNL of 45 dB or less.
>
> *Policy 11-5:* In developing residential areas exposed to a DNL in excess of 65 dB due to single events such as train operation, indoor noise levels due to these single events shall not exceed a maximum noise level of 50 dBA in bedrooms and 55 dBA I other habitable rooms. Single event indoor residential noise levels from airport related *causes* will be 45 dB CNEL.
>
> *Policy 11-8:* Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods.
>
> *Policy 11-9:* Sensitive land uses shall be encouraged to be located away from noise areas, or the impacts of noise on these uses shall be mitigated. If residential areas are

planned adjacent to industrial noise sources, then a noise study shall be performed to determine the extent of any noise impacts and identify appropriate noise mitigation measures.

The *General Plan* requires that new projects meet acceptable exterior noise level standards as established in the Noise and Land Use Compatibility Guidelines shown in **Table 4.I-2**. These guidelines, along with future noise contour maps contained in the General Plan, are to be used by the County as a guide for evaluating the compatibility of "noise sensitive" projects in potentially noisy areas. If an area is currently below the maximum "normally acceptable" noise level, an increase in noise up to the maximum is not necessarily allowed.

The *General Plan Noise Element* also establishes a DNL standard for outdoor noise levels in residential areas of 60 dB. However the County recognizes that a DNL of 60 dB or less may not be achievable in all residential areas due to economic or aesthetic constraints. For lands within 3 miles of the Buchanan Field Airport, such as the project site, the Noise Element requires that noise compatibility for aircraft related noise be adjusted to those of the Airport Land Use Compatibility Plan ("ALUCP"), which are roughly 5 CNEL lower than shown in Table 4.I-2.

TABLE 4.I-2
LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS (DBA)

	Community Noise Exposure (DNL or CNEL)			
Land Use Categories	**Normally Acceptable[a]**	**Conditionally Acceptable[b]**	**Normally Unacceptable[c]**	**Clearly Unacceptable[d]**
Residential – Low Density Single family, Duplex, Mobile Homes	<60	55 to 70	70 to 75	>75
Residential – Multi Family	<65	60 to 70	70 to 75	>75
Transient Lodging – Motels, Hotels	<65	60 to 70	70 to 80	>80
Schools, Libraries, Churches, Hospitals, Nursing Homes	<70	60 to 70	70 to 80	>80
Auditoriums, Concert Halls, Amphitheaters	--	<70	--	>65
Sport Arenas, Outdoor Spectator Sports	--	<75	--	>70
Playgrounds, Neighborhood Parks	<70	--	67.5 to 75	>72.5
Golf Courses, Riding Stables, Water Recreation, Cemeteries	<75	--	70 to 80	>80
Office Buildings, Business, Commercial and Professional	<70	67.5 to 77.5	>75	--
Industrial, Manufacturing, Utilities, Agriculture	<75	70 to 80	>75	--

[a] Normally Acceptable – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
[b] New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.
[c] New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
[d] New construction or development clearly should not be undertaken.

SOURCE: Contra Costa County General Plan Noise Element – Figure 11.6, January 2005.

Implementation measure 11-f of the Noise Element requires the County to adopt a noise ordinance as the method to regulate noise from sources other than transportation sources. The noise ordinance is to include specific noise level limits for stationary sources taking into account the type of adjacent land use. Contra Costa County currently does not have an ordinance specifically addressing noise. Noise complaints within unincorporated areas of the county are addressed through application of peace disturbance sections of the County Code and application of generic nuisance ordinances of the County Code.

Contra Costa County Airport Land Use Compatibility Plan (ALUP)

The project site would be located within the airport influence area of Buchanan Field Airport. New single-family, duplex and mobile homes are considered normally acceptable at aircraft noise exposures up to 55 dBA, CNEL and marginally acceptable at exposures between 55 and 65 dBA, CNEL. The ALUP also considers a maximum, aircraft-related interior noise level of 45 dBA, CNEL to be acceptable for living and sleeping areas of single and multi-family residences with the airport influence area. This interior noise standard would be achieved if residential uses are located out side airport's 60 dB contour.

Impacts and Mitigation Measures

Significance Criteria and Analysis Methodology

The assessment of potential noise impacts considers the introduction of anticipated noise levels generated during construction and operation that would result from the project. Based on Appendix G of the CEQA *Guidelines*, implementation of the project would result in a significant noise impact if it would:

- Expose persons to, or generate, noise levels in excess of standards established in the jurisdiction's general plan or noise ordinance, or applicable standards of other agencies. More specifically, significant noise impacts may be expected whenever the sound level exceeds the compatibility criteria identified in the "Land Use Compatibility for Community Noise Environments" (see Table 4.I-2);
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- Expose persons to or generation of excessive ground-borne vibration or ground-borne noise levels;
- Expose people residing or working in the project area to excessive noise levels if the project is located within an area covered by an airport land use plan, or where such plan has not been adopted, within two miles of a public airport or public use airport; or
- Expose people residing or working in the project area to excessive noise levels if the project is located in the vicinity of a private airstrip.

Construction Noise. The project would result in a significant construction impact if construction activity would occur outside of the daytime hours permitted by the noise policies established in the *General Plan* and/or result in noise levels substantially greater than existing noise levels at nearby sensitive receptors.

Traffic Noise. A change in noise levels of less than three dBA is not discernible to the general population; an increase in average noise levels of three dBA is considered barely perceptible, while an increase of five dBA is considered readily perceptible to most people (Caltrans, 1998). Therefore, traffic noise would be considered significant if the project would increase ambient noise levels along roadways in the project vicinity above existing ambient noise levels by greater than 5 dBA and if the resultant noise level would be inconsistent with the standards in the *General Plan* land use/noise compatibility matrix (shown in Table 4.I-2).

Impacts

Impact I.1: Construction activities with the project would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project and in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (Significant)

The project includes the development of 163 single-family homes and associated internal roadways on 42 acres, and two open space parcels of approximately 11.6 and 15 acres. The project would retain a hilltop of approximately 10 acres as undeveloped land. Project construction is expected to begin sometime in 2010 and would occur over one to three years depending on weather conditions and project phasing. Construction staging would occur primarily on the site.

Construction, although typically short-term, can be a significant source of noise. Construction is most significant when it takes place near sensitive land uses, occurs at night, or in early morning hours. Local governments typically regulate noise associated with construction equipment and activities through enforcement of noise ordinance standards, implementation of general plan policies and imposition of conditions of approval for building or grading permits. **Table 4.I-3** shows typical exterior noise levels at various phases of commercial construction and **Table 4.I-4** shows typical noise levels associated with various types of construction related machinery.

Construction-related activities would temporarily increase ambient noise levels within the project site and the project vicinity over the duration of construction. Construction-related noise levels at and near locations on the project site would fluctuate depending on the particular type, number and duration of use of various pieces of construction equipment. The effect of construction noise would depend upon the level of construction activity on a given day and the related noise generated by that activity, the distance between construction activities and the nearest noise-sensitive uses and the existing noise levels at those uses.

TABLE 4.I-3
TYPICAL CONSTRUCTION NOISE LEVELS

Phase	Noise Level (L_{eq})[a]
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Exterior Finishing	89
Pile Driving[b]	90-105

[a] Estimates correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase and 200 feet from the other equipment associated with that phase.
[b] Project does not propose pile driving

SOURCE: US Environmental Protection Agency, 1971.

TABLE 4.I-4
TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment	Noise Level (dBA) @ 50 Feet	With Feasible Noise Control[a]
Earthmoving		
Front Loader	79	75
Backhoe	85	75
Dozer	80	75
Tractor	80	75
Scraper	88	80
Grader	85	75
Paver	89	80
Materials Handling		
Concrete Mixer	85	75
Concrete Pump	82	75
Crane	83	75
Stationary		
Pump	76	75
Generator	78	75
Impact		
Pile Driver	101	95
Jack Hammer	88	75
Rock Drill	98	80
Pneumatic Tools	86	80
Other		
Saw	78	75
Vibrator	76	75

[a] Estimated levels obtainable by selecting quieter procedures or machines and implementing noise-control features requiring no major redesign or extreme cost.

SOURCE: US Environmental Protection Agency, 1971.

Pile driving is not anticipated to be used as part of project construction. Therefore, as shown in Table 4.I-3, excavation and exterior finishing would form the noisiest phases of construction for the project. To support the development of 163 housing lots and associated internal roadway system, the project's grading plan proposes to substantially alter the existing topography of the project site. The project is estimated to require approximately 1.7 million cubic yards (CY) of grading with soil removed from the hillside to be used as fill on-site. The main noise sources associated with excavation and grading are the operations of excavators removing material and trucks hauling excavated materials to other locations on the site that would need to be filled. The main noise sources associated with exterior finishing would be operation of concrete mixers and pumps for application of stucco material to the building exterior.

The dominant construction equipment noise source is usually a diesel engine without sufficient muffling. Stationary equipment consists of equipment that generates noise from one general area and includes items such as pumps, generators, compressors, etc. These types of equipment operate at a constant noise level under normal operation and are classified as non-impact equipment. Other types of stationary equipment such as pile drivers, jackhammers, pavement breakers, blasting operations, etc., produce variable and sporadic noise levels and often produce impact-type noises. Impact equipment is equipment that generates impulsive noise, where impulsive noise is defined as noise of short duration (generally less than one second), high intensity, abrupt onset, rapid decay and often rapidly changing spectral composition. For impact equipment, the noise is produced by the impact of a mass on a surface, typically repeating over time. Mobile equipment such as dozers, scrapers, graders, etc., may operate with power applied in a cyclic fashion in which a period of full power is followed by a period of reduced power. Other equipment such as compressors, although generally considered to be stationary when operating, can be readily relocated to another location for the next operation. Construction-related noise levels generally fluctuate depending on the construction phase, equipment type and duration of use, distance between noise source and receptor and presence or absence of barriers between noise source and receptor.

Noise from construction activity generally attenuates (decreases) at a rate of 6 to 7.5 dBA per doubling of distance. Construction associated with the project could take place as close as 100 feet from the nearest existing sensitive residential receptors. This would result in noise levels of approximately 83 dBA during excavation and exterior finishing. These noise levels would be significantly greater than existing noise levels at these receptors. Therefore, this would constitute a significant impact. Implementation of Mitigation Measures I-1a through I-1b would reduce potential impacts for existing sensitive receptors to less-than-significant levels.

> **Mitigation Measure I.1a:** All construction contractors shall be required to limit all noise-generating construction activities to the less noise-sensitive daytime hours between 8:00 AM and 5:00 PM, from Monday through Friday unless otherwise approved by the County. Construction activity that does not generate noise would be allowed from 7:30 AM to 5:00 PM, from Monday through Friday. No construction shall take place on weekends and State and federally mandated holidays as recognized by the Board of Supervisors unless otherwise approved by the County.

Mitigation Measure I.1b: Construction contractors shall be required to implement the following noise control measures:

- Equipment and trucks used for project construction shall utilize the best available noise control techniques (*e.g.*, improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible);

- Impact tools (*e.g.*, jack hammers, pavement breakers and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to approximately 10 dBA. External jackets on the tools themselves shall be used where feasible and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible;

- Stationary noise sources shall be located as far from adjacent receptors as possible and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible; and

Mitigation Measure I.1c: The following list of measures shall be implemented to respond to and track complaints pertaining to construction noise:

- Designate a Project Construction Complaint and Enforcement Manager to receive complaints and a procedure for notifying the appropriate County staff and the Sheriff's Office, if necessary;

- Post signs on-site pertaining to permitted construction days and hours and complaint procedures and a Project Construction Complaint and Enforcement Manager to notify in the event of a problem;

- Post listing of telephone numbers (during regular construction hours and off-hours);

- Notify neighbors within 300 feet of the project construction area at least 30 days in advance of pile-driving activities about the estimated duration of the activity; and

- A preconstruction meeting shall be held with the job inspectors and the general contractor/on-site project manager to confirm that noise mitigation and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.

Significance after Mitigation: Less than Significant.

Impact I.2: Increased traffic from the operation of the project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. (Less than Significant)

Most of the noise generated once the project is constructed and occupied would primarily be traffic-generated noise. The project would contribute to an increase in local traffic volumes, resulting in higher noise levels along local roadways. Using a spreadsheet based upon algorithms from the Federal Highway Administration's Highway Traffic Noise Prediction Model (FHWA-RD-77-108), traffic noise levels were analyzed for roadway segments that experienced the greatest percentage increase in project traffic when compared to existing traffic volumes along those segments. To assess the significance of the increase in traffic noise due to the project, roadside p.m. peak-hour noise levels have been estimated for existing, existing plus project, existing plus project plus approved projects and 2030 cumulative plus project conditions. Results of the modeling are presented in **Table 4.I-5**. The segments shown in the table experience the greatest increase in traffic noise due to project traffic.

TABLE 4.I-5
TRAFFIC NOISE INCREASES ALONG LOCAL ROADWAYS IN THE PROJECT AREA

Street Segment	Modeled Noise Level at 50 Feet From Roadway Centerline						
	Existing (2008)	Existing + Approved Projects	Existing + Approved + Proposed Project	Change vs. Existing	Change vs. Existing + Approved	2030 + Proposed Project	Change vs. Existing
Arthur Road							
North of I-680 NB On Ramp	61.2	61.6	62.9	+1.7	+1.3	63.9	+2.7
South of I-680 NB On Ramp	62.0	62.4	63.5	+1.5	+1.1	64.4	+2.5
North of I-680 SB Off Ramp	62.0	62.4	63.5	+1.5	+1.1	64.4	+2.5
North of I-680 SB Off Ramp	62.7	63.2	64.1	+1.3	+0.9	65.0	+2.3
South of Central Avenue	60.3	60.6	61.7	+1.4	+1.1	62.7	+2.4
North of Pacheco Boulevard	63.8	64.2	64.9	+1.1	+0.7	65.8	+2.0
South of Pacheco Boulevard	62.2	63.2	63.5	+1.3	+0.3	64.4	+2.2
North of Palms Drive	49.8	51.4	55.1	**+5.4**	+3.7	56.1	**+6.3**
South of Palms Drive	60.7	61.1	62.6	+1.9	+1.5	63.5	+2.9
Palms Drive							
West of Arthur Road	60.4	60.7	61.8	+1.4	+1.1	62.8	+2.4
Central Avenue							
East of Arthur Road	58.0	58.5	60.2	+2.2	+1.7	61.2	+3.2

SOURCE: Environmental Science Associates, 2008.

As shown in Table 4.I-5, the project, upon build-out, would lead to a less than 5 dBA and hence, less than significant increase in noise over the existing modeled noise level at all but one of the analyzed roadway segments. Therefore, this would represent a less-than-significant impact along most segments. The segment of Arthur Road north of Palms Drive would experience a greater than 5 dBA increase in noise due to traffic from the proposed and other approved projects in the area.[1] The cumulative impact of traffic noise along this segment would also be greater than 5 dBA over existing modeled noise levels. However, the resultant noise level due to the addition of traffic from approved projects and the proposed project to existing noise levels would still be less than 60 dBA and hence within the normally acceptable category for the most noise sensitive land uses (single family residential, duplex and mobile homes) according to the land use noise compatibility matrix in the *General Plan*. Therefore, this increase would be considered less than significant.

Mitigation: None required.

Impact I.3: The project would introduce sensitive receptors to a noise environment with noise levels in excess of standards considered "normally acceptable" by the *Contra Costa County General Plan* for such uses. (Significant)

Noise standards are typically addressed in Title 24, local *General Plan* policies and local noise ordinance standards. The project could expose sensitive receptors to noise above the *General Plan* noise standards by introducing sensitive land uses (residential uses) that are incompatible with the noise environment at the site. As discussed earlier, the noise environment at the project site varies from a DNL of 63.4 dBA near the center of the project site to a DNL of 69 dBA near the southern and southwestern parts of the project site where noise impacts of the train activity on the railroad tracks and traffic on I-680 are more pronounced.

The project site is currently designated as Heavy Industry ("HI") in the *General Plan Land Use Element*, which allows for activities requiring large areas of land with convenient truck and rail access. The site falls within the County's Heavy Industrial ("H-I") zoning district which allows for a range of industrial and manufacturing uses. Neither the *General Plan* nor the *Zoning Code* would allow for the residential use on the project site. Therefore, the project includes a *General Plan* amendment and a zoning reclassification as required to permit the proposed development. The project would amend the Land Use Map to reflect the proposed land use designation changes from Heavy Industry (HI) to Single Family Residential-Medium Density (SM). The project also includes a zoning reclassification to Planned Unit District ("P-1""); a district permitting detached single-family dwellings on legally established lots and associated auxiliary structures and uses.

[1] County staff identified approved, but not yet completed projects within the vicinity of the project site area. Each of the projects identified for consideration in the cumulative scenario would introduce new residential uses to the project vicinity. They include Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane), and Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard).

The Noise and Land Use Compatibility matrix (Table 4.I-2) considers a noise environment of up to 60 dBA, DNL as normally acceptable for single-family residential uses proposed by the project. The interior noise standard as required by the *General Plan* is 45 dBA, DNL.

The environmental noise assessment conducted by Illingworth & Rodkin for the project estimated noise exposure on the proposed lots using the U.S. Department of Transportation Federal Highway Administration's traffic noise model (TNM version 2.5). The computer simulation takes into account the future grading on the site and calculates noise levels accordingly. The calculations indicate that noise levels would be less than a DNL of 60 dBA on all lots except lots 57 through 65. These lots would be exposed to exterior noise levels as high as a DNL of 67 dBA and in excess of the *General Plan* standards. This would constitute a significant impact. Implementation of Mitigation Measure I.3a would reduce exterior noise levels at these lots to acceptable levels.

With the exception of the homes on lots 57 through 65, interior noise levels in homes on all other lots would be less than 45 dBA even with windows open. Therefore, no mitigation measures are required for these lots. The homes on lots 57 through 65 would meet the interior noise standard of 45 dBA, DNL only with windows closed. Therefore, homes on these lots will require some form of mechanical ventilation as required in Mitigation Measure I.3c to allow the windows to remain closed at the resident's option so that the interior standard could be met. Preliminary calculations indicate that no sound rated windows would be required. However, as required by Mitigation Measure I.3b, the need for sound rated walls and windows would need to be reviewed and checked when detailed site plans are available. With the implementation of Mitigation Measures I.3a through I.3c, both exterior and interior noise standards would be met at all proposed lots and the impact would be reduced to a less than significant level.

> **Mitigation Measure I.3a:** Detailed site plans for homes on lots 57 through 65 shall provide for backyard fences with no gaps or openings to allow the exterior noise standard for residential uses of 60 dBA, DNL to be met on these lots. Solid wood fences at least 7 feet in height would be required. For homes located on sloping lots that would not have rear yards but rather decks that extend over the hill, the exterior noise level shall be reduced to 60 dBA, DNL by constructing a solid barrier consisting of wood with a Plexiglas top at least 4.5 feet tall or an alternative that provides similar noise attenuation so that people seated on the deck would be shielded from noise emanating from I-680 and the railroad.
>
> **Mitigation Measure I.3b:** Interior noise exposure within homes, particularly those located on lots affected by noise from I-680 and the railroad shall be assessed by a qualified acoustical engineer when detailed site plans are available, to review if sound rated walls and windows would be required to meet the interior noise standard of 45 dBA, DNL. The results of the study shall be submitted to the County showing conceptual window and wall assemblies with Sound Transmission Class (STC) ratings necessary to achieve the noise reductions necessary for the project to satisfy the interior noise criteria within the noise environment at the project site.
>
> **Mitigation Measure I.3c:** Mechanical ventilation shall be provided to homes on lots 57 through 65 as the interior noise standards were found to be met only with the windows closed. This requirement may be waived if sound rate assemblies (as described in Mitigation Measure I-3b) are provided that provide additional attenuation to meet the interior noise standard.

Significance after Mitigation: Less than Significant.

Impact I.4: The project would not expose people residing or working in the project area to aircraft noise levels in excess of standards in the Contra Costa County Airport Land Use Plan. (Less than Significant)

The project site is located approximately one mile north of Buchanan Field Airport and is located within the Airport's influence area. The Contra Costa County ALUP requires that a composite of current and future noise contours provided in the ALUP shall be used as the basis for evaluating the aircraft-related noise levels to which nearby land uses are subjected. As discussed earlier, according to Buchanan Field Airport Policy 5.2.2 in the ALUP, new single-family, duplex and mobile homes are considered normally acceptable at aircraft noise exposures up to 55 dBA, CNEL; and marginally acceptable at exposures between 55 and 65 dBA, CNEL. The Countywide Policy 4.1.4 considers a maximum, aircraft-related interior noise level of 45 dBA, CNEL to be acceptable for living and sleeping areas of single and multi-family residences with the airport influence area. This interior noise standard would be achieved if residential uses are located outside the airport's 60 dB contour.

The project site is located outside the 55-60 dBA noise contour for both existing and future projected composite contours for the Buchanan Field Airport. Hence the project would be consistent with the standards in the ALUP and the project would not introduce residents to a noise environment greater than the ALUP standards. This impact would therefore be less than significant.

Mitigation: None required.

Cumulative Impacts

Impact I.5: The project, together with anticipated future development in the area in general, would not result in a significant cumulative increase in noise levels in the area. (Less than Significant)

A cumulative impact arises when two or more individual projects, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the project's incremental effects must be viewed in connection with the effects of past, current and reasonably foreseeable projects[2]. Notably, any project that would individually have a significant noise impact would also be considered to have a significant cumulative noise impact.

[2] Based on consultation with the County, approved, but not yet completed projects within the vicinity of the project site area were identified. They include Bella Rosa (128-lot subdivision on Pacheco Blvd.), Field Courtyard (89-lot subdivision on Pacheco Blvd.), Blum View Estates (28-lot subdivision on Blum Rd.), Seal Island (24-lot subdivision on Central Ave.), 4762 Pacheco Blvd. (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Dr.), Hillside Estates (9-lot subdivision on 150 Hillside Lane) and Weatherly Place (8-lot subdivision on 4776 Pacheco Blvd.).

Noise from cumulative development in the area would primarily occur from increase in motor vehicle traffic. Table 4.I-5 shows that modeled 2030 noise levels (from cumulative and project traffic) would increase by less than 5 dBA over existing noise levels for all but one analyzed roadway segment. Therefore, the contribution of project and cumulative traffic to noise levels along these segments would be less than significant. Though cumulative traffic noise levels would exceed the existing traffic noise level along the segment of Arthur Road north of Palms Drive by more than 5 dBA, the resultant cumulative noise level would still be below 60 dBA, the acceptable standard for the most noise-sensitive (residential) uses. A change in noise level of 5 dBA is required before any noticeable change in human response would be expected. Therefore, while project and cumulative traffic increase along this segment of Arthur road would generate a perceivable increase in traffic noise, the cumulative impact would still be considered less than significant given that the resultant noise level would be consistent with standards for the most noise-sensitive uses that are already existing or could be proposed along this segment.

Construction noise is typically a local impact and would affect receptors in the immediate vicinity of the project area. Therefore, due to the geographic distribution of the project and other approved and foreseeable projects in the area, the same set of receptors are not likely to be affected by construction activities from more than one project. Even if two construction sites are located right next to each other and equidistant from the same set of receptors, the result of two sets of noise sources would be a 3 dBA increase over what would result if there were only one construction site. Noise attenuates rapidly and the construction site nearest to any receptor would have the most impact. Besides, the construction schedules for the proposed and other approved projects would vary hence reducing the intensity of the impact. In addition, the proposed project would implement Mitigation Measures 3.5-1a through 3.5-1d, to reduce the project's individual impact to a less-than-significant level. Therefore, the overall cumulative impact due to construction activities and the project's contribution to the cumulative impact would both be considered less than significant.

Mitigation: None required.

References – Noise

Caltrans, *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects*, October 1998.

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U.S. Environmental Protection Agency, *Noise from Construction Equipment and Building Operations, Building Equipment and Home Appliances*, December 1971.

J. Population and Housing

Introduction

This section describes the existing conditions, population and housing trends in the Vine Hill/Pacheco Boulevard Area and in unincorporated Contra Costa County. These trends are compared to growth within adjacent cities and towns and Contra Costa County. The *Contra Costa County General Plan* ("*General Plan*"), the 2000 U.S. Census, the California Department of Finance and the Association of Bay Area Government's (ABAG) *Projections 2007* provide most of the data used to establish the population and housing setting.

Setting

Population

Contra Costa County

Contra Costa County has experienced a population growth rate that has generally exceeded the Bay Area Average since 1940. The County has been the third most populated in the Bay Area since 1990, following Santa Clara and Alameda Counties.[1] Contra Costa County's current (as of May, 2008) population is estimated at 1,051,674 according to the California Department of Finance. According to *Projections 2007*, ABAG's biennial forecast of population, housing, jobs and income for the nine-county San Francisco Bay Region, Contra Costa County's population is expected to continue to increase over the next 30 years. ABAG estimates that Contra Costa County will have a population of approximately 1,300,600 by 2035 and will maintain its position as the third most populated Bay Area County. The *General Plan* buildout projections, which are based on ABAG's *Projections 2002*, are slightly lower than current ABAG projections, estimating a 2020 population of about 1,128,800. The analysis in this EIR will consider primarily the ABAG projection, since it is a more recent estimate of future population trends, as it is updated biennially.

Population estimates and percent increases on a countywide level between 1990 and 2035 for the Bay Area region are presented in **Table 4.J-1**. Contra Costa County's population growth was considerable between 1990 and 2008 (an increase of approximately 254,074 people, or 32 percent) and surpassed all other Bay Area counties in terms of the percent increase. Between 2008 and 2035, Contra Costa County's population is expected to increase at a slower rate, approximately 24 percent, but will continue to rank third in terms of the estimated increase in the number of people.

[1] The Bay Area's nine counties consist of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano and Sonoma counties.

TABLE 4.J-1
BAY AREA POPULATION BY COUNTY AND PERCENT CHANGE, 1990-2035

County	1990	2000	2008	% Change 2000-2008	2020	% Change 2008-2020	2035	% Change 2020-2035
Alameda	1,274,700	1,443,741	1,543,000	7%	1,700,700	10%	1,938,600	14%
Contra Costa	**797,600**	**948,816**	**1,051,674**	**11%**	**1,157,000**	**10%**	**1,300,600**	**12%**
Marin	229,900	247,289	257,406	4%	270,600	5%	283,100	5%
Napa	109,900	124,279	136,704	10%	148,100	8%	155,700	5%
San Francisco	724,000	776,733	824,525	6%	857,200	4%	956,800	12%
San Mateo	647,400	707,163	739,469	5%	800,700	8%	861,600	8%
Santa Clara	1,493,800	1,682,585	1,837,075	9%	2,085,300	14%	2,380,400	14%
Solano	335,200	394,542	426,974	8%	514,900	21%	585,800	14%
Sonoma	384,700	458,614	484,470	6%	535,200	10%	568,900	6%

SOURCES: 1990 and 2008 population data provided by the State of California Department of Finance (May, 2008); remaining data provided by ABAG *Projections 2007*.

Central Contra Costa County and Martinez

Contra Costa County is commonly considered as comprised of three distinct geographic areas: West County, East County and Central County, which includes the project site. West County is characterized by urbanized shorelines, a concentration of oil refineries, other industrial land uses and I-80. East County contains the largest land area where communities that began as agricultural centers have recently developed into suburban residential areas. Central County includes 10 of the 19 cities and is composed mostly of low density bedroom communities. Currently, over half of the total County population resides in Central County. ABAG estimates this population will grow by approximately 103,000 people between 2005 and 2035 (approximately 37 percent of the total County population increase for that time period) (Contra Costa County, 2005; ABAG, 2006).

The City of Martinez and its Sphere of Influence ("SOI")[2], which includes the Vine Hill/Pacheco Boulevard Area, are located within Central Contra Costa County (Contra Costa County, 2007; ABAG, 2006). **Table 4.J-2** presents population trends in the City of Martinez, nearby cities and unincorporated Contra Costa County between 1980 and 2005 as well as population projections for 2020 and 2035. The Table also includes population projections for the Martinez SOI.

[2] A Sphere of Influence is a planning area usually larger than, although sometimes contiguous with, a city's municipal boundary. Spheres of Influence are assigned by the Local Agency Formation Commission and typically indicate the probable physical boundary and service area of the city (including areas which may eventually be annexed).

TABLE 4.J-2
CHANGES IN POPULATION
MARTINEZ AND VICINITY, 1980-2035

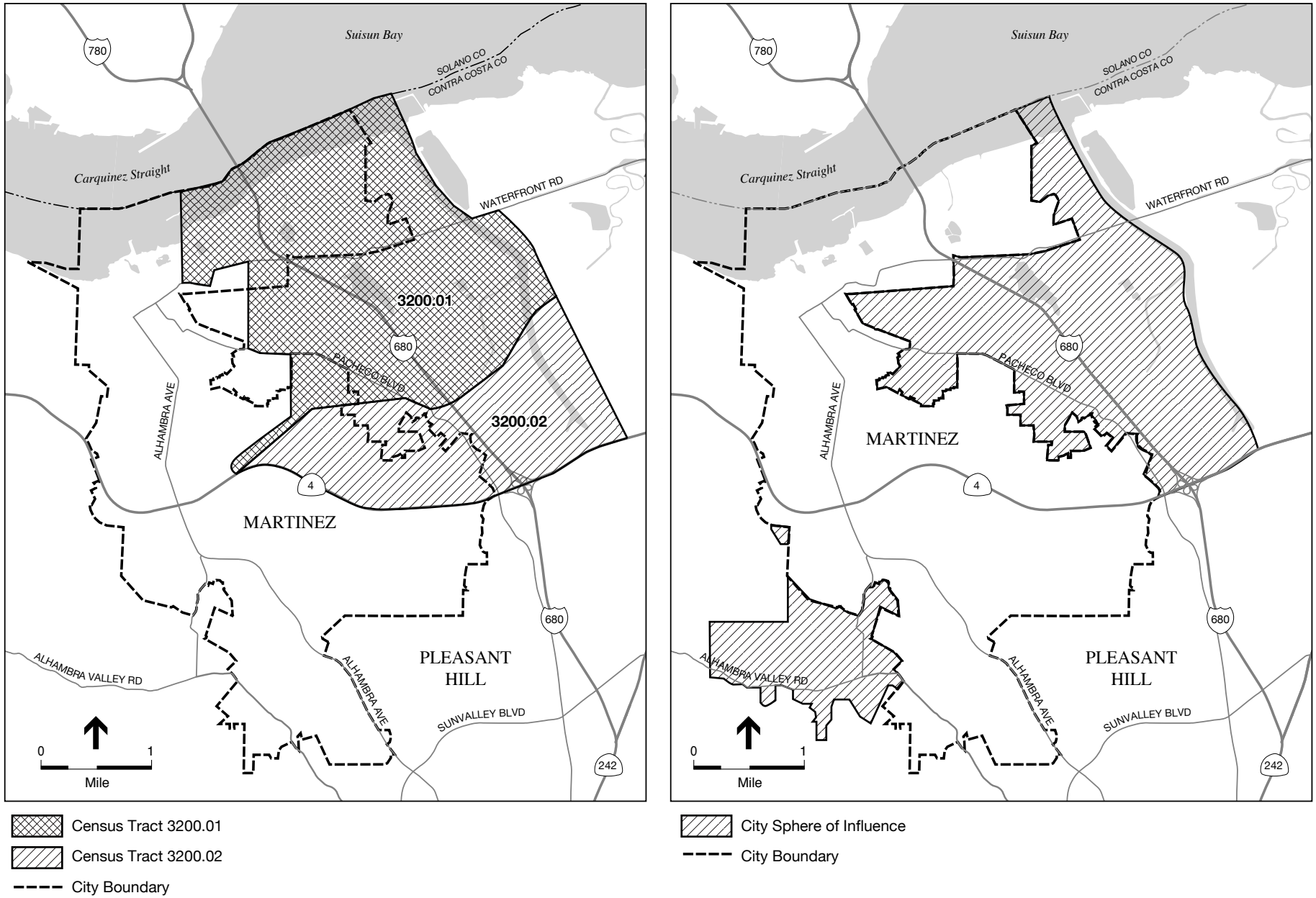
City	1980	1990	% Change 1980-1990	2000	% Change 1990-2000	2005	2020	% Change 2005-2020	2035	% Change 2020-2035
Martinez	22,582	31,450	39%	35,866	14%	36,900	39,600	7%	43,700	10%
Martinez and SOI	**NA**	**NA**	**NA**	**42,061**	**NA**	**43,300**	**47,000**	9%	**51,600**	10%
Concord	103,763	111,000	7%	121,780	10%	125,000	135,400	8%	153,900	14%
Pleasant Hill	25,547	31,550	23%	32,837	4%	33,600	34,900	4%	36,600	5%
Walnut Creek	54,062	60,400	12%	64,296	6%	66,200	70,900	7%	78,300	10%
Unincorporated	192,246	150,100	-22%	151,690	1%	159,650	179,050	12%	189,650	6%
County Total	656,331	797,600	22%	948,816	19%	1,023,400	1,157,000	13%	1,300,600	12%

SOURCES: 1980 AND 1990 population data provided by the State of California Department of Finance (May, 2008); remaining data provided by ABAG *Projections 2007*.

ABAG projects that the population of the City of Martinez and its SOI will grow from 43,300 in 2005 to 47,000 in 2020, an increase of nearly 8.5 percent. ABAG projects a higher growth rate of about 13 percent for Contra Costa County during the same period: from 1,023,400 in 2005 to 1,157,000 in 2020. From 2005 to 2035 the population of the City of Martinez and its SOI is projected to increase by 19 percent (to approximately 51,600 people). This is slightly higher than the population growth rate for the City alone (18 percent increase from 2005) and lower than the population growth rate for the County as a whole (27 percent increase from 2005) (ABAG, 2006).

The U.S. Census identifies the Vine Hill area as a Census Designated Place ("CDP").[3] As of 2000, the U.S. Census estimated that there were approximately 3,254 people living within the CDP (U.S. Census Bureau, 2008). As shown in **Figure 4.J-1**, the project site is located within the U.S. Census Tract 3200.01. The Vine Hill CDP also includes Census Tract 3200.02. The project site is located within the City of Martinez SOI and is under the jurisdiction of Contra Costa County. The population and housing analysis uses the larger area of Martinez and its SOI as the local population to represent the Vine Hill/Pacheco Boulevard Area community and the project vicinity. This is considered both a suitably conservative and inclusive approach to the analysis that implicitly recognizes the commonality of the local community within the Martinez SOI boundary.

[3] Census Designated Places ("CDP") are communities that lack separate municipal government, but which otherwise resemble incorporated places, such as cities or villages. CDPs are delineated to provide data for settled concentrations of population that are identifiable by name but are not legally incorporated under the laws of the state in which they are located. The Census provides information only for the year 2000 for Vine Hill CDP. ABAG includes Vine Hill as part of the City of Martinez Sphere of Influence. Thus, this analysis relies on Census data and ABAG data as applicable.



SOURCE: ESA

Bayview Residential Project . 208078

Figure 4.J-1

Census Tracts and Martinez Sphere of Influence

Employment

The total number of jobs in Contra Costa County, held by both county residents and non-residents was about 379,030 in 2005. By 2020, the County is projected to include approximately 472,910 jobs, representing an increase of about 25 percent between 2005 and 2020. There were approximately 22,000 jobs in Martinez and its SOI in 2005. According to ABAG *Projections 2007*, the number of jobs in Martinez and its SOI are forecast to increase by approximately 25 percent between 2005 and 2020 to a total of 27,560 jobs (ABAG, 2006). **Table 4.J-3** summarizes employment trends within Martinez, its SOI and vicinity.

TABLE 4.J-3
MARTINEZ AND VICINITY EMPLOYMENT CHANGE, 2000–2035

	Number of Jobs					
City	**2000**	**2005**	**% Change 2000-2005**	**2020**	**% Change 2005-2020**	**2035**
Martinez	14,300	14,620	2%	15,100	3%	30,570
Martinez and SOI	**21,250**	**22,000**	**4%**	**27,560**	**25%**	**34,370**
Concord	59,860	61,170	2%	76,260	25%	96,360
Pleasant Hill	16,870	17,160	2%	19,420	13%	22,660
Walnut Creek	54,900	54,830	0%	60,410	10%	69,140
Unincorporated	40,790	41,270	1%	49,760	21%	60,550
County Total	371,310	379,030	2%	472,910	25%	591,650

SOURCE: ABAG *Projections 2007*.

Housing Setting

Contra Costa County

Between 1990 and 2008, the number of housing units increased throughout the Bay Area by approximately 16 percent. During this period, Contra Costa County experienced an approximate 26 percent growth in the housing stock, adding about 81,300 units. In terms of the percentage increase, Contra Costa was exceeded only by Solano County, which experienced an increase of about 27 percent in the housing stock (an increase of about 32,500 housing units). **Table 4.J-4** compares the number of housing units from 1990 to 2008 in each of the nine Bay Area Counties.

Most of Contra Costa County's housing consists of single-family detached homes. In the unincorporated areas, as of 2000, single-family and multi-family units comprised approximately 80 and 14 percent of the housing stock respectively with the remaining 6 percent comprised of mobile homes. Countywide, the housing stock is comprised of approximately 73 percent single-family homes and 25 percent multi-family units. In 2000, homeownership was 73 percent in the unincorporated areas and 69 percent Countywide (Contra Costa County, 2005).

TABLE 4.J-4
NUMBER OF HOUSING UNITS BY COUNTY FOR THE BAY AREA 1990-2008

County	1990 Housing Units	2000 Housing Units	2008 Housing Units	% Change in Housing Units 1990–2008
Alameda	504,109	540,183	570,619	13%
Contra Costa	**316,170**	**354,577**	**397,499**	**26%**
Marin	99,757	104,990	108,538	9%
Napa	44,199	48,554	53,950	22%
San Francisco	328,471	346,527	361,777	10%
San Mateo	251,782	260,578	268,301	7%
Santa Clara	540,240	579,329	622,779	15%
Solano	119,533	134,513	152,041	27%
Sonoma	161,062	183,153	197,907	23%
Bay Area Total	2,365,323	2,552,404	2,733,411	16%

SOURCE: State of California Department of Finance (May, 2008).

City of Martinez and its SOI

According to ABAG *Projections 2007*, there were 16,980 housing units within the City Martinez and its SOI in 2005. By 2020, ABAG forecasts that approximately 1,990 households will be added to the City and its SOI, for a total of 18,970 housing units in 2020. By 2035, the total is anticipated to grow to 21,220 housing units. This growth constitutes a housing increase of about 12 percent by 2020 and 25 percent by 2035.

Household Size

According to ABAG, the average household size in the City of Martinez and its SOI in 2005 was 2.47 persons per household, which was lower than the Contra Costa County's average of 2.75. ABAG projects that, within the City and its SOI, the average household size will slightly decrease to about 2.40 by 2020 and 2.36 by 2035. The average household size within the county is also expected to decline slightly, to 2.69 persons per household by 2020 and 2.66 persons per household in 2035 (ABAG, 2006). This EIR uses the City of Martinez and its SOI 2005 persons per household number as a suitably conservative population generation rate.

Household Income

ABAG estimates for the City of Martinez and its SOI indicate that the mean, household income in 2005 was approximately $89,500.[4] By comparison, the mean household income in Contra Costa County in 2005 was $98,400 (ABAG, 2006).

[4] The Mean Household Income is in constant 2005 dollars.

Jobs/Housing Balance

The concept of a jobs/housing balance is used to examine whether a region has a balance between its housing supply and its employment base. The primary function of such an analysis is to provide a generalized measure of employment or housing need in areas where the relationship between these two characteristics may be out of balance and to indicate the potential severity of such a condition on traffic and related effects to air quality and housing affordability. A region with too many jobs relative to housing is likely to experience escalation in housing prices (with a concurrent decline in affordability for the lower-income segments of the community) and intensified pressure for additional residential development. Conversely, a region that has relatively few jobs in comparison to employed residents may have many workers commuting to jobs elsewhere which can lead to increased traffic congestion and adverse effects on both local and regional air quality.

Although Contra Costa County has a growing employment base, ABAG projects that the county will continue to provide bedroom communities for the workforce of other Bay Area counties (Contra Costa County, 2005). The jobs/employed residents ratio in Contra Costa County is weighted slightly towards employed residents. In 2005, according to ABAG, the jobs/employed residents ratio was about 0.82 (379,030 jobs and 459,600 employed residents). This ratio is expected to remain constant at 0.82 in 2020 (472,910 jobs and 580,100 employed residents) and 2035 (591,650 jobs and 717,600 employed residents).

According to ABAG, the City of Martinez and its SOI has slightly more jobs than employed residents, indicating that residents from other areas commute into the area to work. This reflects the County government employment as well as jobs provided by other major employers in Martinez such as the Shell and Tesoro refineries. The jobs/employed residents ratio within Martinez and its SOI in 2005 was 1.02 (22,000 jobs for 21,520 employed residents). ABAG projects that the jobs/employed residents ratio will increase slightly to 1.05, based on 27,560 jobs and 26,150 employed residents by 2020 and to 1.09, based on 34,470 jobs and 31,630 employed residents by 2035. Therefore, the trend of residents commuting from outside of the area for employment in Martinez and its SOI will continue.

Table 4.J-5 compares the existing and projected jobs to employed residents ratios in Martinez and its SOI as well as Contra Costa County and the Bay Area as a whole.

Regulatory Framework

State of California

Assembly Bill 2853. Assembly Bill 2853 (AB 2853), enacted in 1980, requires all governments to discuss their regional “fair share allocation” of regional housing need by income group in their Housing Elements. In the nine-county San Francisco Bay Area, ABAG is the council of governments authorized under California law to identify existing and future housing needs for the region. The most recent Regional Housing Needs Allocation (RHNA), covering the period from 2007 to 2014, identifies housing needs in each ABAG jurisdiction and allocates a fair share of

TABLE 4.J-5
BAY AREA, CONTRA COSTA COUNTY AND MARTINEZ AND ITS SOI JOBS TO EMPLOYED RESIDENTS RATIOS (2005, 2020, 2035)

	2005	2020	2035
Bay Area			
Jobs	3,449,640	4,280,700	5,247,780
Employed Residents	3,225,100	4,080,900	5,016,500
Ratio	1.07	1.05	1.05
Contra Costa County			
Jobs	379,030	472,910	591,650
Employed Residents	459,600	580,100	717,600
Ratio	0.82	0.82	0.82
Martinez and SOI			
Jobs	22,000	27,560	34,470
Employed Residents	21,520	26,150	31,630
Ratio	1.02	1.05	1.09

SOURCE: ABAG (2006)

that need to every community. ABAG's determination of the local share of regional housing must take into consideration factors including market demand for housing, employment opportunities, availability of suitable sites and public facilities based on local plans, commuting patterns as they relate to the differences between job creation and labor supply, type and tenure of housing and housing needs of farmworkers.

According to the RHNA, the City of Martinez has a total housing construction need of 1,060 units (annual need of approximately 151 units). Unincorporated Contra Costa County needs to supply a total of 3,508 new housing units for the planning period between 2007 and 2014. This number includes accommodating anticipated population growth, achieving a reasonable vacancy rate and replacing substandard dwellings. **Table 4.J-6** shows the 2007-2014 planning period allocation for Martinez and Contra Costa County (ABAG, 2008). The RHNA distributes Contra Costa County's fair share housing need between its cities and unincorporated areas as a whole. In Contra Costa County, the County maintains jurisdiction over land use and development within unincorporated SOIs. Therefore, the allocation of housing need generated by the City of Martinez SOI, outside the City limits, is assigned to the County.

TABLE 4.J-6
PROJECTED NUMBER OF NEEDED UNITS 2007-2014

	Affordability Level				
	Very Low	Low	Moderate	Above Moderate	Total
Martinez	261	166	179	454	1,060
Unincorporated County	815	598	687	1,408	3,508
County Total	**6,5120**	**4,325**	**4,996**	**11,239**	**27,072**

SOURCE: AGAG Proposed Final RHNA (May 2008)

Local Plans and Policies

Contra Costa County General Plan

The *Contra Costa County General Plan* Housing Element establishes comprehensive, long-term objectives and implementing policies for the housing within the county. Those guiding and implementing policies contained in the Housing Element pertinent to the proposed project are discussed below. Please see Section 4.H, *Land Use and Planning*, for other policies in the *General Plan* applicable to the project.

> *Goal 3*: Increase the supply of housing with a priority on the development of affordable housing.
>
> *Goal 6*: Provide adequate sites through appropriate land use and zoning designations to accommodate the County's share of regional housing needs.

Impacts and Mitigation Measures

Significance Criteria and Analysis Methodology

Consistent with CEQA *Guidelines* Appendix G, the project would result in a significant impact relative to population and housing if it would result in adverse physical impacts from:

- Inducing substantial growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);
- Displacing substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displacing substantial numbers of people, necessitating the construction of replacement housing elsewhere.

The project site is currently undeveloped and implementation of the project would not result in displacement of existing housing or people. Therefore, the criteria related to displacement are not discussed further in this EIR. The project proposes to change the land use of the site from undeveloped uses to residential uses. The potential exists for impacts related to population and housing in terms of introducing land uses that would increase the number of housing units in the area. This section assesses these impacts as a result of the implementation of the project based on data from the ABAG *Projections 2007* forecasts, the *Contra Costa County General Plan*, the California Department of Finance and the U.S. 2000 Census. This Section uses the larger area of Martinez and its SOI as the local population to represent the Vine Hill/Pacheco Boulevard Area community and the project. This EIR uses the ABAG's *Projections 2007*, estimates for household size in the City of Martinez and its SOI in 2005 to determine how many people would be expected per housing unit.

Impacts

Impact J.1: The project would result in an increase in the residential population within the area. (Less than Significant)

Development of the project would result in the construction of 163 single-family residential homes. Using ABAG's population estimate of 2.47 people per household, the project would increase the on-site population by approximately 403 residents. According to the ABAG *Projections 2007,* the 2005 population of Martinez and its SOI was 43,300; thus, the proposed residential development would represent an increase of less than one percent of the area's existing population. This would not be considered a substantial population growth in the area. The project would incrementally expand residential development in an area that already contains a substantial number of residential units and is generally urbanized. As noted above in the *Regulatory Framework*, the County needs to supply approximately 3,508 new housing units between 2007 and 2014 in its unincorporated areas (ABAG, 2008). The project's 163 dwelling units would serve to help the County meet its allocation of the regional housing needs.

Although the project would extend infrastructure and roadways within the project site, these improvements would consist of local connections to serve the project site alone. Thus, the project would not indirectly induce substantial population growth, as the infrastructure would not facilitate development at other locations.

Based on the foregoing, the project would not induce substantial population growth in the project site vicinity, either directly or indirectly and the impact would be less than significant.

Mitigation: None required.

Impact J.2: The project would not result in a permanent increase in employment within the area. (Less than Significant)

As noted above, the project site is currently undeveloped. There are no businesses, public or private institutions, or other organizations capable of providing employment presently existing on the site. While temporary construction-related employment would increase on the site during the construction phase of the project, once completed, the project site would be occupied exclusively by residential uses and would not be expected to provide permanent employment. Further, as noted above, ABAG projects that the jobs/employed residents ratio in Martinez and its SOI will continue to increase slightly to 1.05 jobs to residents by 2020 and 1.09 jobs to residents by 2035. Because the project would not impact long-term employment or impair the jobs/housing balance within the Martinez SOI or County, this impact would be considered less than significant.

Physical impacts associated with implementation of the project, and proposed mitigation measures, are discussed throughout this EIR.

Mitigation: None required.

Cumulative Impacts

Impact J.3: The project would increase the on-site population, but would not result in a cumulatively considerable contribution to population growth in area. (Less than Significant)

A cumulative impact arises when two or more individual projects, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the project's incremental effects must be viewed in connection with the effects of past, current, and reasonably foreseeable projects.

Development of the residential project would increase the on-site resident population by approximately 403 persons and provide recreation facilities. Future development could occur within the project vicinity as areas immediately surrounding the project site are within the City of Martinez SOI and the Contra Costa County Urban Limit Line. There are a number of approved, but not yet complete, residential projects in the vicinity that would result in population growth. County staff identified approved, but not yet completed projects within the vicinity of the project site area. Each of the projects identified for consideration in the cumulative scenario would introduce new residential uses to the project vicinity. They include Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane) and Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard). Future new development within the area would be subject to development guidance contained within the *General Plan*.

When considered cumulatively with other past, current, and reasonably foreseeable development in the vicinity, the Bayview Residential Project would not, by itself, induce a substantial resident or employment population increase and the project therefore would not result in a cumulatively considerable impact to cumulative population growth.

Mitigation: None required.

References – Population and Housing

Association of Bay Area Governments (ABAG), *Projections 2007,* December 2006.

Association of Bay Area Governments (ABAG), *Final Housing Needs Allocation,* May 5, 2008.

California Department of Finance (Ca DOF, *Table E-1 City/County Population Estimates with Annual Percentage Change*, May, 2008.

California Department of Finance (Ca DOF), *Table 90 E-4 Population Estimates for California State and Counties January 1, 1981 to January 1, 1990* and *Table 84 E-4 Population Estimates for California State and Counties January 1, 1976 to January 1, 1980,* official website, accessed May 8, 2008a.

California Department of Finance (Ca DOF), *Table E-8 City/County/State Population and Housing April 1, 1990 to April 1, 2000,* official website, accessed May 8, 2008b.

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U.S. Census Bureau, *DP-1Profile of General Demographic Characteristics: 2000,* http://factfinder.census.gov/servlet/QTTable?_bm=y&-geo_id=16000US0682842&-qr_name=DEC_2000_SF1_U_DP1&-ds_name=DEC_2000_SF1_U&-_lang=en&-_sse=on, accessed May 9, 2008.

K. Public Services and Utilities

Introduction

This section describes the existing provision of public services and utilities to the project area, including fire prevention and suppression, emergency medical services, police protection, schools, parks, water supply, wastewater treatment and disposal, solid waste disposal, electricity and natural gas. Potential impacts related to the provision of services and utilities are identified and measures to reduce or eliminate potentially significant impacts are identified.

Setting

Fire Prevention and Suppression/ Emergency Medical Services

The project site is located within the service area of the Contra Costa County Fire Protection District ("CCCFPD"), one of seven fire protection districts serving the unincorporated County area. The CCFPD provides fire and emergency medical services to a population of 600,000 and a 304 square mile area including nine cities and unincorporated areas. The CCCFPD's service area covers the majority of the central part of the County and extends from Oakley on the east, Moraga on the south and the cities of Richmond, Pinole and Hercules on the west. The northern limits of the service area are defined by the shorelines of Suisun Bay and the Sacramento and San Joaquin rivers. CCCFPD's 30 fire stations are staffed with approximately 406 personnel including 344 uniformed personnel, 12 Battalion Chiefs and approximately 62 civilian personnel. Each three-person firefighting crew includes a paramedic. The CCCFPD responded to 57,428 calls for service in 2007, 46,882 of which were for emergency medical response (CCCFPD, 2008). The CCCFPD serves an estimated population of 600,000 (Ryan, 2008a).

The CCCFPD has responsibility for the prevention and suppression of structure fires at residential, commercial and industrial properties, including several petroleum refineries and chemical manufacturing plants within the service area. The District also responds to auto fires and provides emergency response to accidents and medical emergencies. Although the California Department of Forestry has responsibility for wildland fires, the project site falls within a Local Responsibility Area and the CCCFPD responds to any wildfires within its service area. In accordance with nationally recognized standards, the response time goal for the CCCFPD is to provide full alarm assignment (4 engines and 1 combination ladder truck and pumper) within 8 minutes of notification of 90 percent of the incidents. Currently, 2 of the 5 fire stations are able to meet the response time goal of 8 minutes (Ryan, 2007).

The CCFPD maintains 2 stations that provide fire protection and emergency medical aid to the project site. The Fire District first-response station is Station #12, at 1240 Shell Avenue in Martinez, about 2.5 miles travel distance west of the project site. Response time to the project site from Station #12 is approximately 5 minutes. Additional services are available from Station #9, located approximately 3 miles south of the project site at 209 Center Avenue in Martinez.

Response time to the project site from Station #9 is approximately 6 minutes. Each station employs three personnel including one paramedic (Ryan, 2007).

Police Protection

The project site is served by the Contra Costa County Sheriff's Office ("Sheriff's Office") and the California Highway Patrol. The Sheriff's Office employs 720 sworn personnel and 332 general employees for a total staff of 1,052. The Sheriffs' Patrol Division provides uniformed law enforcement services to the residents who live either in Contra Costa County's 521 square miles of unincorporated land, a contract city or a special district. In addition to providing police protection services, the County Sheriff investigates crimes and functions as the County Coroner. A network of four Station Houses, each commanded by a Lieutenant and serving a distinct geographic area, enables provision of law enforcement services to the residents of the unincorporated areas of the County. The project site is served by the Muir Station, located at 1980 Muir Road in Martinez, approximately 2.5 miles south of the project site (Contra Costa County Sheriff's Office, 2008).

The jurisdiction covered by Muir Station spans an area from the Benicia Bridge south along the I-680 corridor to Walnut Creek and east of State Route ("SR") 4 to Bay Point. The Muir Station responds to calls for service, including 911 calls. Overall, the Sheriff's Office received 177,101 calls for service in 2007. The Muir Station received 49,635 calls, or 28% of the total. Response times for the Sheriff's Office depend upon the priority of the call, with emergency calls given priority over non-emergency calls. As of 2007, the median response time for Priority 1 calls was 4 minutes 19 seconds for the Muir Station (Mahoney, 2008).

Schools

The project site is located within the boundaries of the Martinez Unified School District (MUSD), which operates four elementary schools, one middle school, one high school and two alternative schools, all located in the City of Martinez. The 2007-2008 District-wide enrollment was 4,077 students (California Department of Education, 2008).

School-age children living in the proposed Bayview subdivision would attend Las Juntas Elementary School, located at 4105 Pacheco Boulevard; Martinez Junior High School, at 1600 Court Street; and Alhambra Senior High School, at 150 E Street (MUSD, 2008). For the 2007-2008 school year, total enrollment was 318 at Las Juntas Elementary School, 996 at Martinez Junior High and 1300 at Alhambra Senior High School. Although Martinez Junior High has experienced minor increases in enrollment in recent years, all other schools serving the project area have shown an overall decline in enrollment numbers. Overall, the district has experienced an approximate 7 percent decline in enrollment since the 2000-2001 school year (California Department of Education, 2008). Excess capacity is therefore currently available at each of the schools that would be utilized by the project.

The Leroy F. Greene School Facilities Act of 1998, or Senate Bill 50 (SB 50), restricts the ability of local agencies such as Contra Costa County to deny land use approvals on the basis that public

school facilities are inadequate. SB 50 establishes the base amount of allowable developer fees at $2.97 per square foot of residential construction and $0.47 per square foot of commercial construction.[1] These fees are intended to address local school facility needs resulting from new development. Public school districts can, however, impose higher fees provided they meet the conditions outlined in the act. Private schools are not eligible for fees collected pursuant to SB 50.

Child Care Facilities

Licensed child care in Contra Costa County is provided in child care centers, such as preschools, nursery schools and day care centers, or in child care homes. Community Care Licensing, the regulatory agency of the State Department of Social Services, determines the number of children that a provider may care for in a child care center or family child care home. The Contra Costa County Child Care Facilities Ordinance (82-22) mandates that a sufficient number of openings be available for parents to have flexibility and options in finding quality child care. Vacancy rates are calculated conservatively by considering only vacancies beyond 15% of the total number of child care spaces available (Jacobs, 2006).

According to a child care needs assessment conducted by the Contra Costa Child Care Council in 2006, nineteen licensed child care centers are currently serving children within 3 miles of the project site. Three of these centers are government-subsidized and provide services only to families qualifying as “low income”. Two of the centers offer services for school age children (5 years and older) and are currently at capacity. Overall, child care centers in the project vicinity are operating near full capacity. Family child care providers in the area have available spaces for preschool children (2-5 years) but care for infant/toddler (0-2 years) and school age children is limited (Jacobs, 2006).

Parks

Regional Parks and Major Open Space Areas

Regional parks and major open space areas often encompass hundreds or even thousands of acres and are typically established in order to protect uniquely valuable natural resources. Therefore, each regional park and open space area itself is unique and offers specific recreational opportunities that are not otherwise available in the immediate vicinity of most Bay Area residents. Within Contra Costa County, regional parks and open spaces areas are owned and managed by federal and state governments, the East Bay Regional Park District and municipalities. Regional parks and open space areas within 10 miles of the project site include the Martinez Regional Shoreline, the Carquinez Strait Regional Shoreline Park, Briones Regional Park, John Muir National Historic Park, Acalanes Ridge Open Space, Lime Ridge Open Space and the Waterbird Regional Preserve (Contra Costa County, 2005; City of Walnut Creek, 2008; EBRPD, 2008).

[1] These are current base fees adopted by State Allocation Board (SAB), which is the policy-level body for the programs administered by the Office of Public School Construction within the State Department of General Services. The SAB is authorized by Government Code Section 65995(b)(3) to increase the base fee every two years. In order to levy the fees, school districts must prepare a “nexus” analysis demonstrating why the fees are required and how they will be used.

The East Bay Regional Park District ("EBRPD") manages a network of 65 regional parks covering more than 98,000 acres throughout Contra Costa and Alameda counties. The District maintains a network of more than 1,150 miles of hiking and multi-use trails, including 150 miles of regional inter-park trails and an additional 250 miles of paved trails linking regional parks. The EBRPD maintains these facilities to conserve open space and cultural resources and provide outdoor recreational opportunities. The District's *Master Plan 1997* identifies the existing and planned parks and trails within its service area and establishes policies and guidelines for maintaining District standards of service in resource conservation, management, interpretation, public access and recreation (EBRPD, 1996; EBRPD, 2008).

The closest EBRPD park to the project site is the Waterbird Regional Preserve, located less than 0.5 miles northwest of the project site. Much of the 198-acre park consists of marshland, with a loop multi-purpose trail located on the higher eastern half of the park. McNabney Marsh was occupied for several centuries by the Chupcan, a Native American tribelet of the Bay Miwok, until the incursion of Europeans into the area in the 1800s. Today the marsh provides habitat for a variety of bird species and offers bird watchers an opportunity to view waterfowl, shorebirds and raptors. The marsh is managed jointly by the EBRPD, Mountain View Sanitary District, Contra Costa County Mosquito and Vector Control District and the California Department of Fish and Game (EBRPD, 2008).

Also nearby is Martinez Regional Shoreline, located about 2.6 miles northwest of the project site. The western half of the park provides cultivated lawns, small family picnic areas and several miles of hiking trails near the pond and creek within the park and along the shoreline of Carquinez Strait. The eastern half of the park is operated by the City of Martinez and includes group picnic areas, softball fields, soccer fields, bocce ball courts and a horse arena (EBRPD, 2008). Immediately adjacent to the west of the Martinez Regional Shoreline is the Carquinez Strait Regional Shoreline. This 1,145-acre park and the adjoining 1,939-acre Crockett Ranch Regional Park consist mostly of open grass-covered hillsides overlooking Martinez and the Carquinez Strait and wooded ravines crossed by multi-purpose trails (EBRPD, 2008).

Briones Regional Park, located about 3.5 miles southwest of the project site, is substantially larger than the shoreline parks described above. Encompassing 6,117 acres, Briones is a protected wilderness in central Contra Costa County with open rolling hillsides, deep, wooded canyons and a large network of multi-purpose trails open to hikers, bikers and horseback riders. An archery range, campgrounds and picnic areas are also located in the park.

Just north of the Briones Regional Park, the National Park Service manages the John Muir National Historic Site's 326-acre oak woodland called Mt. Wanda (National Park Service, 2008). The 177-acre Acalanes Ridge Open Space and the Lime Ridge Open Space, roughly 900 acres, are a part of the City of Walnut Creek Open Space and Trails Division. They are located approximately 9 miles south and approximately 6 miles southeast of the project site respectively (City of Walnut Creek, 2008).

Three large regional trails pass through the project area. The California State Riding and Hiking Trail starts at the Carquinez Strait Regional Shoreline in Martinez and currently ends in Concord;

extensions of the trail to Mt. Diablo State Park are under construction. The Contra Costa Canal Regional Trail is a 13.5-mile paved multi-use trail that traces a horseshoe–shaped alignment from Martinez to Concord. It connects with other regional trails, including the California State Riding and Hiking Trail. Still under construction, the Iron Horse Trail currently runs approximately 24.5 miles between the cities of Concord and San Ramon, following the former Southern Pacific Railroad right-of-way. When complete, it will pass in proximity to the project site, along Pacheco Creek, terminating at the shoreline (EBRPD, 2008).

Local Parks

Local parks are areas set aside for active and passive recreational uses in the immediate vicinity of their users. These parks might include play apparatus for children, play areas, sports fields and courts, swimming pools, community centers, picnic areas and open grass areas. Local parks are found in developed areas and often serve as focal points for neighborhoods and communities. A number of small local parks are located in the project area, most of them operated by the City of Martinez. The closest park is Morello Park, located 1 mile southwest of the project site, at the intersection of Morello Avenue and Morello Park Drive. This 5-acre park has a baseball field, basketball court, tennis court, volleyball court, picnic areas and daycare center. Holiday Highlands Park is slightly further, at Fig Tree Lane and Eastwoodbury Lane, about 1.1 miles southwest of the project. Encompassing 2 acres, the park provides a neighborhood picnic area, playground and multi-use field. Mountain View Park on Parkway Drive north of Howe Road is about 1.9 miles west of the project site. A baseball field, multi-use field, basketball court and picnic area are located in this 4.5-acre park (City of Martinez, 2008).

One park operated by the City of Concord—Hillcrest Community Park—would also be readily accessible by project residents. Located about 2 miles to the east at the intersection of Olivera Road and Peralta Road, this 26-acre community park has picnic areas, a model airplane flying area, a children's play area and athletic fields for softball, baseball and soccer. A tributary to Walnut Creek running through the park is being restored with native vegetation to stabilize the banks and re-establish the natural riparian habitat (City of Concord, 2008).

Water Supply

Supply Entitlements

The project site is within the Contra Costa Water District (“CCWD”) service area. CCWD’s 137,127-acre service area encompasses the northern, central and eastern portions of the County. The cities served include Concord, Clayton, as well as portions of Martinez, Walnut Creek and Pleasant Hill. In addition to providing treated potable water directly to a population of about 265,000 people, the CCWD delivers water wholesale to six local water agencies—including the cities of Antioch, Pittsburg and Martinez—that distribute the water to their customers. In total, the District supplies water to a population of about 550,000 people.

The majority of CCWD’s water supply comes from the Sacramento-San Joaquin Delta via the Central Valley Project (“CVP”), under a contract with the U.S Bureau of Reclamation (“USBR”).

CVP water comes down the Sacramento River from Shasta, Folsom and Claire Engle reservoirs. These reservoirs collect runoff water, including snow melt, from the Sierra Nevada, Cascade Range and Coast Range. CCWD's contract entitlement is for 195,000 acre-feet[2] per year ("AFY"). During drought or other water shortage conditions, CCWD's contract with the USBR entitles the District to 85 percent of its historical use or 75 percent of its contract entitlement, whichever is less. In 2005 the CCWD executed a 40-year renewal contract with the USBR.

The CCWD also receives San Joaquin River water from Mallard Slough, with rights to 26,700 AFY. However, due to poor water quality, the average yield from this source has been about 6,500 AFY. A number of industries in the CCWD service area have rights to divert San Joaquin River water directly to their facilities, including Gaylord Container (28,000 AFY) and Ultramar Diamond Shamrock (16,650 AFY). These supplies are also variable due to the poor water quality that often occurs in the river. Although groundwater resources are available in the Clayton area, this source does not provide a significant supplement to the County's surface water supplies. Private wells are also owned throughout the CCWD service area, providing an estimated 3,000 AFY to the individuals, businesses and municipal water utilities that own them.

Limited additional supplies are available to the District during shortages in the CVP. The CCWD has agreements to purchase surplus irrigation water from the East Contra Costa Irrigation District ("ECCID"), a portion of whose service area overlaps with the CCWD's service area. The CCWD can purchase up to 8,200 AFY of surface water and up to 4,000 AFY of groundwater (by exchanges) when the CVP is in a shortage situation, but this purchased water must be used only for municipal and industrial purposes within the ECCID's service area.

Storage and Conveyance

CCWD's raw (untreated) water is stored locally in four reservoirs: Martinez Reservoir (270 AF of capacity), Contra Loma Reservoir (2,500 AF), Mallard Reservoir (3,000 AF) and Los Vaqueros Reservoir (100,000 AF). Although the Los Vaqueros Reservoir was just completed in 1998, in 2004, CCWD voters passed a measure to study the feasibility of expanding the facility to as much as 500,000 AF. These reservoirs serve varying functions, including improving water quality (through blending), regulating storage for peak demand, emergency supply storage and operational flexibility. An additional 40 smaller reservoirs throughout the service area are used to store treated water.

Raw water is transported throughout the CCWD service area in the concrete-lined Contra Costa Canal, the backbone of the District's water conveyance system, which also includes 778 miles of pipeline for transporting treated water. The 48-mile-long canal extending from Rock Slough in Knightsen (east of Oakley), through Walnut Creek and terminating at the Martinez Reservoir, utilizes four lift stations in the first 7.1 miles out of Rock Slough to lift the water 124 vertical feet. Water flows by gravity through the remaining length of the canal. Capacities in the canal west of Pumping Plant 1 range from approximately 22 cubic feet per second ("cfs") to 350 cfs. The first 4 miles of the canal, the only sections unlined with concrete, are scheduled for conversion to an

2 An acre–foot of water is the amount of water needed to flood an acre of land to a depth of 1 foot. It is equivalent to 43,560 cubic feet, or approximately 325,851 gallons.

underground pipeline by 2010. This improvement will reduce flood risk related to nearby levees and improve water quality, by eliminating intrusion of salt water.

A 42-inch-diameter Multi-Purpose Pipeline was constructed in 2003 to increase conveyance capacity between the District's treatment plant in Oakley and the treated water distribution system in Central County. This pipeline has freed up capacity in the Contra Costa Canal for the conveyance of raw water to wholesale and industrial customers and has improved system reliability.

Treatment

The CCWD operates two water treatment plants within its service area; treatment of raw water delivered in the District's canal is also performed by the communities and water agencies that purchase CCWD water under contract. The CCWD's primary treatment facility is the Bollman Water Treatment Plant, located in Concord. This plant provides primary treatment of water pumped from Mallard Reservoir. The plant has a permitted capacity of 75 million gallons per day (mgd) (Seedall, 2007). Treated water is pumped from the plant throughout the District's treated water service area in a network of 778 miles of pipeline ranging from 2 to 66 inches in diameter arrayed across eight pressure zones. The District's second treatment plant, the Randall-Bold Water Treatment Plant, is located in Oakley and is operated jointly with the Diablo Water District, which delivers treated water to the City of Oakley. The plant has a permitted capacity of 40 mgd.

A third plant is currently under construction adjacent to the Randall-Bold Water Treatment Plant. This plant will provide water treatment for a major new CCWD customer, the City of Brentwood. When complete, this plant will have a treatment capacity of 15 mgd, which is expected to ultimately be expanded to 30 mgd to meet future growth in Brentwood.

Urban Water Management Plan

The 1983 California Urban Water Management Planning Act requires all public and private water agencies supplying water to more than 3,000 customers or supplying more than 3,000 AFY to prepare an Urban Water Management Plan ("UWMP"), to be updated every five years.[3] The UWMP must evaluate existing and future sources of water supply, quantify existing and projected demand and identify demand management and other conservation measures for residential, commercial, governmental and industrial water users, among other requirements. Water planning must be performed in five-year increments for at least a 20-year period, or as far into the future as available demographic and other data permit.

The CCWD adopted an updated UWMP in 2005 that documents the District's planning activities to ensure adequate water supplies to meet existing and future demands for water through 2030 and beyond (CCWD, 2005). In addition to continued use of CVP water, the future water supply study evaluated groundwater, recycled water, desalination and water transfers as potential supply sources.

[3] California Water Code, Division 6, Part 2.6, Sections 10610–10656.

The UWMP determined that existing and projected water supplies are expected to be adequate to meet near-term (i.e., through 2009) demands in all conditions except multi-year drought conditions, when short-term water purchases from agricultural districts and other water agencies and voluntary conservation would enable the CCWD to meet demand. Projected demand of 143,750 AFY would be met by the projected normal–year total supply of 210,100 AFY, by the projected single-year drought supply of 168,200 AFY and by the projected two-year drought supply of 150,800 AFY. In a multi-year drought the projected total supply of 133,400 AFY would be 10,350 AFY short of anticipated demand.

Projected total normal–year water supplies would be sufficient to meet demand through all future years (i.e., through 2030) modeled in the UWMP. However, shortages are forecast for multi-year droughts by 2010 and for all single-year and multi-year drought scenarios by 2015. In general, two-year droughts would have shortages of around 10,000–13,000 AFY. By a third consecutive year of drought, shortages would range from 29,300 AF in 2010 to 33,200 AF in 2030.

To address these projected future water supply deficits, the CCWD has identified a variety of demand management measures for implementation, adopted a Water Shortage Contingency Plan and taken a multi-pronged approach to protecting and improving its water supply sources. Implementation of the preferred alternative identified in the District's 2002 *Future Water Supply Study* is expected to provide a minimum of 22,000 AFY of additional supply through water transfer agreements and the remainder of any deficit would be addressed through a combination of short-term water purchases and implementation of drought demand management measures. The District's expanded conservation program (referred to as CPA1) is expected to reduce demand from wholesale and retail customers by a minimum of 8,000 AFY by 2040. Existing programs, which include a variety of survey/inspection programs and fixture retrofits and replacements, currently result in annual savings of an estimated 2,787 AFY. The Water Shortage Contingency Plan sets forth demand reduction goals in four stages linked to the availability of water supplies, ranging from up to 10 percent voluntary conservation when 90 percent of supply is available to up to 50 percent mandatory conservation in a Stage IV water crisis.

Recycled water is another component of the CCWD's long-term sustainable water supply strategy. The District delivered 8,620 AF of recycled water to its service area in 2005 for use on landscaping and industrial applications, including power plants. The District has existing agreements for delivery of up to 13,080 AFY and expects to meet this demand by 2010. It will also continue to work with local wastewater agencies to expand the appropriate and safe use of recycled water as an important tool in water supply management. This water could potentially be used for industrial process or cooling water and urban irrigation.

CCWD is also jointly exploring, along with the Bay Area's other three largest water agencies—East Bay Municipal Utility District, San Francisco Public Utilities Commission and Santa Clara Water District—the potential development of regional desalination facilities (EBMUD, 2008).

Water Supply Assessment

Senate Bill 610 amended State law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties.[4] The purpose and legislative intent of Senate Bill 610 was to further integrate land use and water supply planning and to ensure that long-term water supplies are available to support new land uses. SB 610 requires detailed information regarding water availability (in the form of a water supply assessment ("WSA") to be provided to the city and county decision–makers and included in the administrative record, prior to approval of specified large development projects. Under SB 610, water assessments must be furnished to local governments for inclusion in any environmental documentation for certain projects (including residential developments with more than 500 dwelling units) subject to the California Environmental Quality Act. The lead agency for the project is responsible for preparing the assessment, or initiating the request for preparation to the relevant water supplier. The WSA must evaluate whether the public water system's total projected water supplies during normal, single dry and multiple dry years during a 20-year projection will meet the anticipated water demand of the project and all other existing and planned future users.

Because the project entails the development of fewer than 500 dwelling units, a formal water supply assessment was not performed for the project.

Wastewater Treatment and Disposal

The project site does not currently fall within the jurisdiction of a wastewater treatment provider. Although the entirety of the project site falls within the sphere of influence ("SOI") of the Mt. View Sanitary District ("MVSD"), the project sponsor proposes annexation of a northwestern portion of the project site into the MVSD and the remainder of the property into the Central Contra Costa Sanitary District ("CCCSD") (MVSD, 1986).[5]

In 1963, the California Legislature established a commission in each county responsible for overseeing most forms of local government boundary change including incorporation, annexations and special district formations. The resulting Local Agency Formation Commission ("LAFCO") is a regulatory agency charged by the State legislature with, among other things, approval or denial of proposals to annex land to special districts. The Contra Costa County Local Agency Formation Commission would therefore be required to approve or deny any proposed annexation of the project site into a sanitary district. A discussion of this process is included below in Impact K.8.

For informational purposes, discussions of the MVSD and CCCSD systems and capacities follow.

4 California Water Code, Division 6, Part 2.10, Sections 10910–10915.
5 A sphere of influence is a plan for the probable physical boundaries and service area of a local agency.

Mt. View Sanitary District

Established in 1923, MVSD's initial system fed into a community septic tank. The district began primary water treatment in 1951, secondary treatment in 1968 and in 1974 the district began to reclaim wetlands to meet effluent disposal limits set by the Regional Water Quality Control Board ("RWQCB").[6]

Today, approximately 110 miles of sewers and 4 pump stations are serviced and maintained by the District. Wastewater received from MVSD customers passes through a screen system where large debris is removed and hauled to an approved landfill. Wastewater is then run through a series of clarification, nitrification and biofilter systems to achieve the clarity required to disinfect the water with ultraviolet light. Using this ultraviolet light disinfection operation, MVSD has been able to eliminate the use of gaseous chlorine, sulphur dioxide and ammonia from the water treatment process.

As indicated above, the MVSD treatment plant effluent flows into a series of marshes, rather than into a deep-water outfall which is more commonly used. Currently, about 185 acres of wetlands receive the MVSD's treated effluent. These marshes, enhanced by the reclaimed effluent, support a variety of aquatic invertebrates, waterfowl and other wildlife as well as visitors for educational and recreational purposes (MVSD, 2008).

Today, the MVSD provides sewer service to approximately 25,000 people (approximately 90% residential and 10% small business) in unincorporated areas east of the City of Martinez. The facility treats an average daily flow of 2.0 million gallons per day ("mgd") of wastewater (MVSD, 2008). The district has the capacity to treat up to 3.2 mgd of dry weather flows and 8 mgd of wet weather flows to a secondary level (Leptein, 2008a).

Central Contra Costa Sanitary District

Established in 1946, the Central Contra Costa Sanitary District ("CCCSD") provides wastewater collection, treatment and disposal services in central Contra Costa County. The CCCSD provides services to an estimated population of 448,700 residents (approximately 314,400 within the District boundaries and 134,300 by contract in Concord and Clayton). The service area encompasses 142 square miles and includes Danville, Lafayette, Moraga, Orinda, Pleasant Hill and Walnut Creek, as well as a portion of Martinez and San Ramon and unincorporated areas within central Contra Costa County. The CCCSD's sphere of influence includes an additional 41.5 square miles in areas adjacent to the District's western and eastern boundaries as well as some islands surrounded by the District (Contra Costa County LACFO, 2008).

6 Secondary treatment of wastewater or sewage involves the removal of organic matter using biological and chemical processes. This level of treatment is higher than primary treatment, which involves removal of floating and settleable solids using physical operations such as screening and sedimentation. Secondary treatment is less intensive than tertiary treatment, in which additional chemical and biological treatment processes are used to remove compounds in preparation for discharge or reuse.

Approximately 1,500 miles of pipelines and 18 pump stations are cleaned and maintained on a daily basis. Wastewater received from CCCSD's domestic, commercial and industrial customers is treated in the wastewater treatment plant, located just northeast of the I-680/SR 4 interchange, approximately 1.25 miles south of the project site. All wastewater is treated to a secondary level with the addition of an ultraviolet disinfection process (CCCSD, 2008). The majority of the secondary treated effluent is discharged through a deep-water outfall into Suisun Bay. Approximately 1.5 mgd of tertiary treated recycled water is used for landscape irrigation in the District's service area (Contra Costa County LAFCO, 2008). This secondary treatment facility has a capacity of up to 55 mgd of dry weather flow and 240 mgd of wet weather flow (CCCSD, 2008). As of 2008, the average dry weather flow is approximately 39.1 and the permitted capacity is approximately 53.8 mgd (Contra Costa County LAFCO, 2008). For a discussion of the CCCSD wastewater treatment plant property and potentially incompatible land uses, see Section 4.H, *Land Use and Planning*.

Stormwater

Increases in impervious surfaces increase the volume and runoff rates of storm water, which can lead to increases in the amount of pollutants (i.e., metals, petroleum) in storm water. See Section 4.G, *Hydrology and Water Quality*, for additional information regarding water quality and quantity impacts related to storm water.

Solid Waste

Contra Costa County's Solid Waste/Recycling Division oversees most solid waste and recycling franchise agreements for the County's unincorporated areas. However, the Mt. View Sanitary District ("MVSD") holds an independent franchise agreement for services in the unincorporated areas within its jurisdiction. As discussed above, the project site could potentially be annexed into the MVSD. Regardless, both the County and the MVSD contract with Allied Waste Industries, Inc ("Allied Waste," formerly Pleasant Hill Bayshore Disposal) to provide solid waste and recycling collection and disposal. Residential and commercial solid waste collected by Allied Waste is taken to the Contra Costa Transfer and Recovery Station (in the vicinity of the project site) and then disposed of at the Keller Canyon Landfill located in the unincorporated Pittsburg area within Contra Costa County. Recyclables are taken for processing to Pacific Rim Recycling in Benicia. Construction and Demolition debris is recycled at the Contra Costa Transfer Station. (Hurl, 2008).

The Keller Canyon Landfill, a wholly owned subsidiary of Allied Waste, opened on May 7, 1992. The facility accepts municipal solid waste, non-liquid industrial waste, contaminated soil, ash, grit and sludges. Active landfill operations occur on 244 acres of the 2,600 acre Keller Canyon property. Its service area includes eastern and central Contra Costa County (Allied Waste, 2008). As of 2004, the total capacity remaining was approximately 63.4 million cubic yards with a maximum daily permitted disposal of 3,500 tons. The Keller Canyon Landfill is not expected to close until 2030 (CIWMB, 2008).

The California Integrated Waste Management Act (Assembly Bill 939) requires each California city and county to demonstrate how the jurisdiction would meet the mandated solid waste diversion goals of 50 percent on and after January 1, 2000. As of 2004, the total annual waste diverted from landfills by residents and businesses in unincorporated Contra Costa County was approximately 49 percent (CIWMB, 2008). In addition and also as required by the California Integrated Waste Management Act, Contra Costa County adopted a *Countywide Integrated Waste Management Plan* and *Source Reduction and Recycling Element* ("SRRE"). The Integrated Waste Management Act establishes waste management goals, objectives and policies related to solid waste disposal; facilities siting; household hazardous waste collection and disposal; and implementing programs to achieve plan goals. The SRRE establishes policies and goals related to source reduction, recycling, composting, special waste and public information and education and programs designed to achieve SRRE goals.

Contra Costa County's Construction and Demolition Debris Recovery Ordinance (Ordinance 2004-16) is intended to reduce the quantity of construction and demolition debris disposed in landfills as required by state law. The Ordinance requires owners of all construction or demolition projects that are 5,000 square feet in size or greater to demonstrate that at least 50 percent of the construction and demolition debris generated on the jobsite are reused, recycled, or otherwise diverted.

Electricity and Natural Gas

Electrical power and natural gas are provided to the Vine Hill/Pacheco Boulevard Area by Pacific Gas and Electric Company ("PG&E"). PG&E obtains its energy supplies from power plants and natural gas fields in northern California and from energy purchased outside its service area from a variety of sources, including other utility companies. PG&E is the primary provider of gas and electrical power to Contra Costa County. Throughout most of the County, electrical power is delivered via overhead distribution and high voltage transmission lines and natural gas is distributed through underground piping. PG&E expands its services on an as-needed basis and requires the user to fund the extension of service.

The State of California regulates energy consumption under Title 24 of the California Code of Regulations. Title 24 Building Energy Efficiency Standards apply to energy consumed for heating, cooling, ventilation, water heating and lighting in new residential and nonresidential buildings. The standards are updated periodically to incorporate new energy efficiency technologies and methods.

Regulatory Framework

Local Plans and Policies

Contra Costa County General Plan. The *Contra Costa County General Plan* contains goals and policies pertaining to fire protection, public protection, schools, parks, water service, sewer service and solid waste within its Public Facilities/Services Element, Growth Management Element, Conservation Element and Open Space Element. The Public Facilities/Services Element establishes goals and policies and implementation measures that address the vital infrastructure

and public services that must be provided. The Growth Management Element establishes performance standards related to the provision of essential public utilities/services. The Conservation Element presents goals and policies for resource protection including energy and water. The Open Space Element presents goals and policies to preserve and efficiently manage open space within the County. These goals and policies are summarized as follows:

Public Services:

- Ensure a high standard of police and fire protection, emergency and medical response services for all citizens and properties through out Contra Costa County.
- Assure the provision of adequate primary, secondary and college facilities in the County.
- Provide adequate child care and preschool services through compliance with the provisions of the adopted child care ordinance.
- Assure high quality civic, medical and other community facilities are provided to meet the broad range of needs within unincorporated areas of the County.

Open Space:

- Develop a sufficient amount of conveniently located, properly designated parks and recreational facilities to serve the needs of all residents.
- Preserve major parklands and areas of natural beauty or historical interest for future generations.
- Promote active and passive recreational enjoyment of the County's physical amenities.
- Preserve a well balanced distribution of local parks.
- Distribute and manage recreational activity according to an area's carrying capacity, with special emphasis on controlling adverse environmental impacts.

Water Use, Conservation and Demand:

- Require that water service systems meet regulatory standards for water delivery, water storage and emergency water supplies.
- Require demonstration that adequate water quantity and quality can be provided based on information furnished or made available to the County from consultations with the appropriate water agency.
- Encourage reclamation of water as a supplement to existing water supplies.

Wastewater:

- Require that wastewater treatment capacity can be provided and that treatment facilities operate in compliance with waste discharge requirements established by the California Regional Water Quality Control Board.

Solid Waste:

- Consider solid waste disposal capacity in County land use planning and permitting.

- Encourage solid waste resource recovery (including recycling, composting and waste to energy) so as to extend the *life* of sanitary landfills, reduce environmental impact and to make use of a valuable resource.

Performance Standards. The Growth Management Element of the Contra Costa County General Plan sets forth the following performance standards related to water service, sanitary sewer, fire protection, public protection and parks and recreation facilities which are applicable to the project:

Water Service

The County … shall require new development to demonstrate that adequate water quantity and quality can be provided.

Sanitary Sewer

The County … shall require new development to demonstrate that adequate sanitary sewer quantity and quality can be provided.

Fire Protection

Fire stations shall be located within one and one-half miles of developments in urban, suburban and central business district areas. Automatic fire sprinkler systems may be used to satisfy this standard.

Public Protection

A Sheriff facility standard of 155 square feet of station area and support facilities per 1,000 population shall be maintained within the unincorporated are of the County.

Parks and Recreation

Neighborhood parks: 3 acres required per 1,000 population.

Impacts and Mitigation Measures

Significance Criteria and Analysis Methodology

Based on Appendix G of the CEQA *Guidelines*, implementation of the project would have a significant effect on public services and utilities if it would:

- Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:
  - Fire protection;
  - Police protection;
  - Schools;
  - Parks; or
  - Other public facilities;

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment;
- Conflict with wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in the construction of new storm water drainage facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require new or expanded water supply resources or entitlements;
- Result in a determination by the wastewater treatment provider that would serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs;
- Conflict with federal, state and local statutes and regulations related to solid waste; or
- Conflict with applicable federal, state and local statutes and regulations related to energy standards.

The methodology for this analysis included corresponding with the various public services and utility agencies with existing or potential jurisdiction over the project site to request current information about service capabilities, service ratios, response times, performance objectives, number of apparatus devoted to the project vicinity, etc. and reviewing web-based information about these agencies. Generation rates used to calculate the project's anticipated demand for public utilities were acquired from the Contra Costa Water District, the Mt. View Sanitary District, California Department of Education, ABAG *Projections 2007* and the California Integrated Water Management Board. Additionally, the project was evaluated for conformity with the goals, objectives and policies of the *General Plan* related to recreation.

Impacts

Impact K.1: The project would increase the demand for fire protection and emergency medical services, which would not result in the need for the provision of new or physically altered facilities, the construction of which would cause significant environmental impacts. (Significant)

The project would increase the on-site population and the number of on-site buildings which would increase the demand for fire protection services and emergency response services within

the Vine Hill/Pacheco Boulevard Area of Contra Costa County. The project site would be served by Fire Station #12, located at 1240 Shell Avenue in Martinez, about 2.5 miles from the project site and Fire Station #9, located at 209 Center Avenue in Martinez, approximately 3 miles south of the project site. The *General Plan* Fire Protection Policy 7-62 states that the County shall strive to reach a maximum running time of 3 minutes and/or 1.5 miles from the first-due station. As stated above in the *Regulatory Framework*, installation of automatic fire sprinkler systems may be used to satisfy this standard. In accordance with Contra Costa County Ordinance 87-98, the project sponsor shall pay a Fire Facilities Fee of three hundred dollars per dwelling unit (Ryan, 2008). Therefore, the Contra Costa County Fire Protection District has determined that, with implementation of the following mitigation measure, the District would have adequate fire protection and emergency medical services to sufficiently serve the project and no new or physically altered facilities would be required (Ryan, 2007). A discussion of water pressure requirements for fire suppression service to the project is included in Impact Statement K.8 below.

> **Mitigation Measure K.1:** The project sponsor shall equip all dwelling units with residential automatic fire sprinkler systems complying with the 2002 edition of the National Fire Protection Association Standard 13D, subject to the review and approval of the Contra Costa County Fire Protection District.

Significance after Mitigation: Less than Significant.

Impact K.2: The project would increase the demand for police protection services, but would not result in the need for the provision of new or physically altered facilities. (Less than Significant)

The project site would be served by Muir Station, located at 1980 Muir Road in Martinez, approximately 2.5 miles south of the project site. The addition of 163 new residential dwelling units would increase the population by approximately 403 new residents (assumes 2.47 people per unit, see Section 4.J, *Population and Housing*) and therefore the need for police protection services. However, the Sheriff's Office does not anticipate that the project would directly result in the need for new or physically altered facilities (Wright, 2007). In addition, a new police service district would be required to be adopted as a part of the subdivision approval process (Contra Costa County Board of Supervisors, 1992). Therefore, the potential impact to police protection services would be less than significant.

Mitigation: None required.

Impact K.3: The project would increase the demand for public school services, but would not result in the need for the provision of new or physically altered facilities. (Less than Significant)

The addition of 163 new residential dwelling units would result in new students residing on the site. Using the student generation rate developed by the California State Department of Education, the proposed 163 dwelling units could result in approximately 82 elementary or middle school students and 33 high school students for a total of about 115 new students on the project site.[7] Students could attend nearby schools, including Las Juntas Elementary School, Martinez Junior High School and Alhambra Senior High School. The new students that could be generated by the project would result in an approximate 6 percent increase to elementary and middle schools serving the project site and an approximate 2.5 percent increase to the Alhambra Senior High School.

As noted above, excess capacity is currently available at each of the schools that would be utilized by the project. Based on the foregoing, the increase in student enrollment as a result of the project would be considered negligible. Pursuant to the Leroy F. Greene School Facilities Act of 1998, the project sponsor would be required to contribute its fair-share in student impact fees in accordance with Martinez Unified School District requirements. Therefore, the potential impact to schools would be less than significant.

Mitigation: None required.

Impact K.4: The project would increase the demand for child care services, but would not result in the need for the provision of new or physically altered facilities. (Less than Significant)

The addition of 163 new residential dwelling units would result in new children residing on the site. The Contra Costa Child Care Council ("Council") uses a compilation of Census Bureau data and local statistics to develop a formula to calculate child care needs for the project vicinity. Based on the figures from the Council's database, the project would result in an estimated need for 40 child care spaces comprised of 9 infant/toddler spaces, 9 preschool spaces and 22 school age spaces. The project would be subject to the Contra Costa County Child Care Facilities Ordinance (82-22), which mandates that new projects address their contribution to the need for child care services by paying a fee of $400 per dwelling unit to the county, providing adequate child care facilities on-site or off-site or demonstrating that the project related child care needs

[7] The California State Department of Education estimates that one dwelling unit could generate an average of 0.7 students, consisting of 0.5 elementary or middle school students and 0.2 high school students. The State's student generation rates are a result of statewide sampling that incorporates widely varying dwelling unit types, households and other demographic characteristics across the state and, therefore, may not reflect the actual characteristics of the local area. However, when considering US Census Bureau 2006 data for Contra Costa County and the City of Martinez, as well as the Martinez Unified School District Student Generation Rates for New Housing, the state generation rate is higher and therefore represents a more conservative estimate.

would be met through the use of existing facilities. As such, the potential impact to child care services would be less than significant.

Mitigation: None required.

Impact K.5: The project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, nor include recreational facilities or require the construction or expansion of recreational facilities. (Less than Significant)

The project would increase the permanent on-site population, thus increasing the demand for parks and recreational facilities. The Growth Management Element of the *Contra Costa County General Plan* establishes standards for the provision of Neighborhood Parks, which generally have service areas equivalent to elementary schools, at the rate of 3 acres per 1,000 population. The *General Plan* does not include a standard for Major Parks or Open Space areas, but endorses the expansion of such areas in the County to protect the County's unique natural resources.

With the development of 163 housing units, which would have a population of approximately 403 (assumes 2.47 people per unit), the project would be required to provide approximately 1.2 acres of recreational facilities. The project would include two open space parcels of approximately 11.6 and 15 acres. The project also would include a hilltop of approximately 10 acres which would remain undeveloped. Because the 11.6-acre open space would be included as part of the project and because the project would not require the construction of new or physically altered recreational facilities off-site, the project would have a less-than-significant impact with respect to recreational resources and facilities. Further, the project sponsor may be subject to an additional park dedication fee as required by Title 9 of the Contra Costa County Subdivisions Ordinance.

Mitigation: None required.

Impact K.6: The domestic and emergency water demand generated by the project would not exceed water supplies available from existing entitlements and resources. (Less than Significant)

Implementation of the project would increase demand for potable water. The project would be served by the Contra Costa Water District ("CCWD"). As the site is undeveloped, the current water demand is zero. For purposes of sizing water distribution infrastructure and estimating potential effects to the CCWD's water supplies, the estimated water demand rate for single-family homes is approximately 0.5 acre-feet per year ("AFY") or roughly 450 gallons per day ("gpd"). In sum, the project would increase domestic water demand by approximately 82 AFY (Seedal, 2008).

As noted in the Setting section, the CCWD holds entitlements to approximately 210,100 AFY of water. As of 2004, CCWD's demand was 143,750 AFY. The project, at approximately 82 AFY, would represent a 0.05 percent increase over 2004 demand levels. While water demand would increase as a result of the project, based on the CCWD's available water rights and the current level of water demand, it is expected that existing water supplies would be sufficient to serve the project and no new or expanded entitlements would be needed. Also as noted above, the CCWD anticipates a shortfall of water supply in multi-year droughts by 2010 and in single-year droughts by 2015. To address this potential shortage, the CCWD has adopted a Water Shortage Contingency Plan and is currently exploring a number of approaches to improving its water supply. Although the project would add to this unmet demand in drought years, the project related increase would not be considerable.

Mitigation: None required.

Impact K.7: The project would require or result in construction of new water facilities or expansion of existing facilities, the construction of which would cause significant environmental effects. (Significant)

As the project site is currently undeveloped, the project would require new and upgraded water conveyance infrastructure on and offsite. The project sponsor would be required to fund water main extensions to provide adequate domestic water supply, fire flows and system redundancy to the project prior to obtaining water service. Depending on CCWD metering requirements and fire flow requirements set by the Fire District, the project sponsor would be required to fund pipeline and fire hydrant installation and offsite pipeline improvements. New infrastructure would likely include a new connection with existing pipelines under Central Avenue via a new 12-inch pipeline underneath the flood control channel ("CCCFCD") on the southeast portion of the project site potentially crossing wetlands (the effects of pipeline construction through wetlands is addressed in Section 4.C, *Biological Resources*).

> **Mitigation Measure K.7a:** The project sponsor shall fund the design and installation of any necessary water main extension, additional pumps and meters, offsite pipelines improvements and reservoirs required to serve the project. Such a system shall be designed with a capacity and refill rate to ensure a minimum fire flow of 1000 gallons per minute from not more than one hydrant flowing for the duration of 120-minutes while maintaining 20-pounds residual pressure in the main. The final system design shall be subject to the review and approval of the Contra Costa County Fire Protection District (Leach, 2008).

Significance after Mitigation: Less than Significant.

Impact K.8: The project would generate demand for wastewater utility service, which would require annexation of the project site into a Sanitary District. The project would result in expansion of existing wastewater collection system, the construction of which would not cause significant environmental effects. (Significant)

As stated above, LAFCO would be required to approve or deny the proposed annexation of the northwestern portion of the project site into the Mt. View Sanitary District ("MVSD") and annexation of the remainder of the property into the Central Contra Costa Sanitary District ("CCCSD"). Because the entirety of the project site currently falls within the SOI of the MVSD, an application to reduce the MVSD SOI along with a second application to expand the CCCSD SOI would require LAFCO approval. Should the requested changes the SOI boundary be approved, LAFCO would subsequently require separate annexation applications from each sanitary district. For consideration and approval, these applications would require "will serve" letters confirming each District's ability and intent to provide wastewater utility service to the expanded area.

In October of 2004 and again in April of 2008, MVSD wrote letters to the County requesting that the project sponsor annex the entirety of the project site into their District (Leptein, 2004; Leptein, 2008). Also in October of 2004 and April of 2008, CCCSD wrote letters to the County stating that, because the entirety of the project property is within the MVSD SOI and because the District considers the proposed residential use to conflict with their current operations nearby, the CCCSD does not intend to annex the property nor does it intend to provide wastewater utility service to the project site (Batts, 2004; Kelly, 2008). Although the CCCSD would have adequate wastewater treatment capacity to serve the project, given the above, it is not reasonably foreseeable to assume a successful annexation of the subject property into CCCSD. Nor is reasonably foreseeable to assume the proposed 163 single-family houses would receive wastewater utility service from the CCCSD.

As the project site is undeveloped, the proposed development would increase wastewater flows. Development of the project would result in an increase in wastewater treatment demands by approximately 32,600 gallons per day (Leptein, 2008a). This output would represent an approximate 1.6 percent increase over the MVSD daily average flow. As stated above, the MVSD has the capacity to treat to a secondary level up to 3.2 mgd for dry weather flows and up to 8 mgd of wet weather flows. Therefore, given the District has sufficient existing capacity to serve anticipated project's wastewater demands, the project would not result in the construction of new or expanded wastewater treatment facilities. However, portions of the existing sanitary sewer collection system may not be adequate to support the project.

The project would require new connections to MVSD's existing infrastructure. The project would be required to connect to an existing sewer running under I-680. Although the condition of this line is unknown at this time, offsite upgrades to this line as well as to sewers in Central Avenue, Valley Drive and Palms Drive may be required (Leptein, 2004, Leptein, 2008a). It is assumed that these improvements would require temporary construction activities, potentially including in-street trenching that would not rise to a level of significance under CEQA as they would be similar to routine upgrades.

Because the CCCSD stated it does not intend to annex the property nor does it intend to provide wastewater utility service to the project site, it would be speculative to describe any necessary improvements related to service extension by CCCSD to the project site.

> **Mitigation Measure K.8a:** The project sponsor shall work with the MVSD, CCCSD and LAFCO to annex the property into a sanitary sewer utility service provider district and secure an agreement for provision of wastewater utility service prior to receiving building permits. This agreement shall be obtained prior to recording the Final Subdivision Map.
>
> **Mitigation Measure K.8b:** The project sponsor shall fund the installation of any necessary sewer main extension, upgrades or replacements required to serve the project. The project sponsor shall enter into a sewer improvement agreement with the wastewater service provider and shall post security for sanitary sewer improvements prior to recording the Final Map.

Significance after Mitigation: Less than Significant.

Impact K.9: The project would generate solid waste but would not exceed the permitted capacity of the landfill serving the project site. (Less than Significant)

Construction Debris

Project construction would generate construction debris. In accordance with Ordinance 2004-16, as described above in the Setting, a minimum of 50 percent of the construction and demolition debris generated by the project would be reused, recycled, or otherwise diverted. Solid waste generated during construction would be transported off-site for sorting and recycling at the Contra Costa Transfer Station (Hurl, 2008). Debris that could not be recycled would be sent to a sanitary landfill in compliance with the Contra Costa County Solid Waste Management Plan. Excess soil generated in grading for the project would be reused on-site as fill.

Operation Debris

As described in the Section J, *Population and Housing*, it is estimated the project would introduce approximately 403 people to the project vicinity. The County's current rate of disposal for its unincorporated area is approximately 3 pounds per resident per day (CIWMB, 2008). Based on this estimate, the project could generate approximately 1,209 pounds per day (approximately 441,285 pounds per year) of solid waste that would need to be disposed of in a landfill. This estimate assumes that the County's diversion rate of 49 percent would remain the same.

As stated above, Allied Waste would provide solid waste collection and disposal services for the project. Solid waste generated by the project would be disposed of in the Keller Canyon Landfill in Pittsburg. With a total capacity remaining was capacity (as of 2004) of 63.4 million cubic yards and permitted operations through 2030, the Keller Canyon Landfill has the capacity to accommodate the additional solid waste that would be generated by the project (Hurl, 2008).

Mitigation: None required.

Impact K.10: The project would increase demand for electricity and natural gas services at the project site. (Less than Significant)

The project would result in an incremental increase in the demand for gas and electrical power given the proposed development on the project site. Overall, the level of energy required of the project would represent a small percentage increase in demand. It would not be expected to violate applicable federal, state and local statutes and regulations relating to energy standards, exceed PG&E's service capacity or require new or expanded facilities. The project would be required to comply with all standards of Title 24 of the California Code of Regulations, aimed at the incorporation of energy-conserving design and construction. Also, any improvements and extensions required to accommodate the project would be determined in consultation with PG&E prior to installation. As a result, although the project would increase energy consumption, it would not result in a significant impact related to the provision of energy services.

Mitigation: None required.

Cumulative Impacts

Impact K.11: Development of the project, in conjunction with other past, present and reasonably foreseeable development in the Vine Hill/Pacheco Boulevard Area, would not result in cumulative impacts on public services or utilities. (Less than Significant)

County staff identified approved, but not yet completed projects within the vicinity of the project site area. Each of the projects identified for consideration in the cumulative scenario would introduce new residential uses to the project vicinity. They include Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane) and Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard). Future new development within the area would be subject to development guidance contained within the *General Plan.*

The project, in conjunction with the above mentioned projects, would result in a cumulative increase in the demand for fire prevention and suppression, emergency medical services, police protection, schools, parks and recreational facilities, water supply, wastewater service, solid waste and other utility services. The Vine Hill/Pacheco Boulevard Area is already served by local public service providers and local utility providers that meet their standards. The development of the project, the impacts of which are mitigated to less than significant with implementation of the above mitigation measures and other reasonably foreseeable future projects in the vicinity would

be incremental and would not individually or cumulatively trigger the need for the expansion of public service or utility facilities as a direct result of project development. Furthermore, the project and other reasonably foreseeable future projects would be required to comply with all standards and contribute their fair-share in impact fees. Therefore, the effect of the project on public services and utilities, in combination with other foreseeable projects, would be less than significant.

Mitigation: None required.

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L. Transportation and Traffic

Introduction

The following section summarizes the results of the traffic analysis for the project by Environmental Science Associates (ESA, 2008). This section provides a discussion of the methodologies and findings of the traffic analysis, while the raw calculation worksheets and other pertinent raw data are provided in the traffic analysis report. The policies and objectives of the County of Contra Costa General Plan Circulation Element and the 2004 Update to the Contra Costa Countywide Comprehensive Transportation Plan of the Contra Costa Transportation Authority ("CCTA") were reviewed for this traffic analysis. This section describes: (1) the existing and planned transportation system in the vicinity of the project, including roadway, bicycle, pedestrian, and transit facilities; (2) the anticipated impacts of the project on these facilities; and (3) associated mitigation measures.

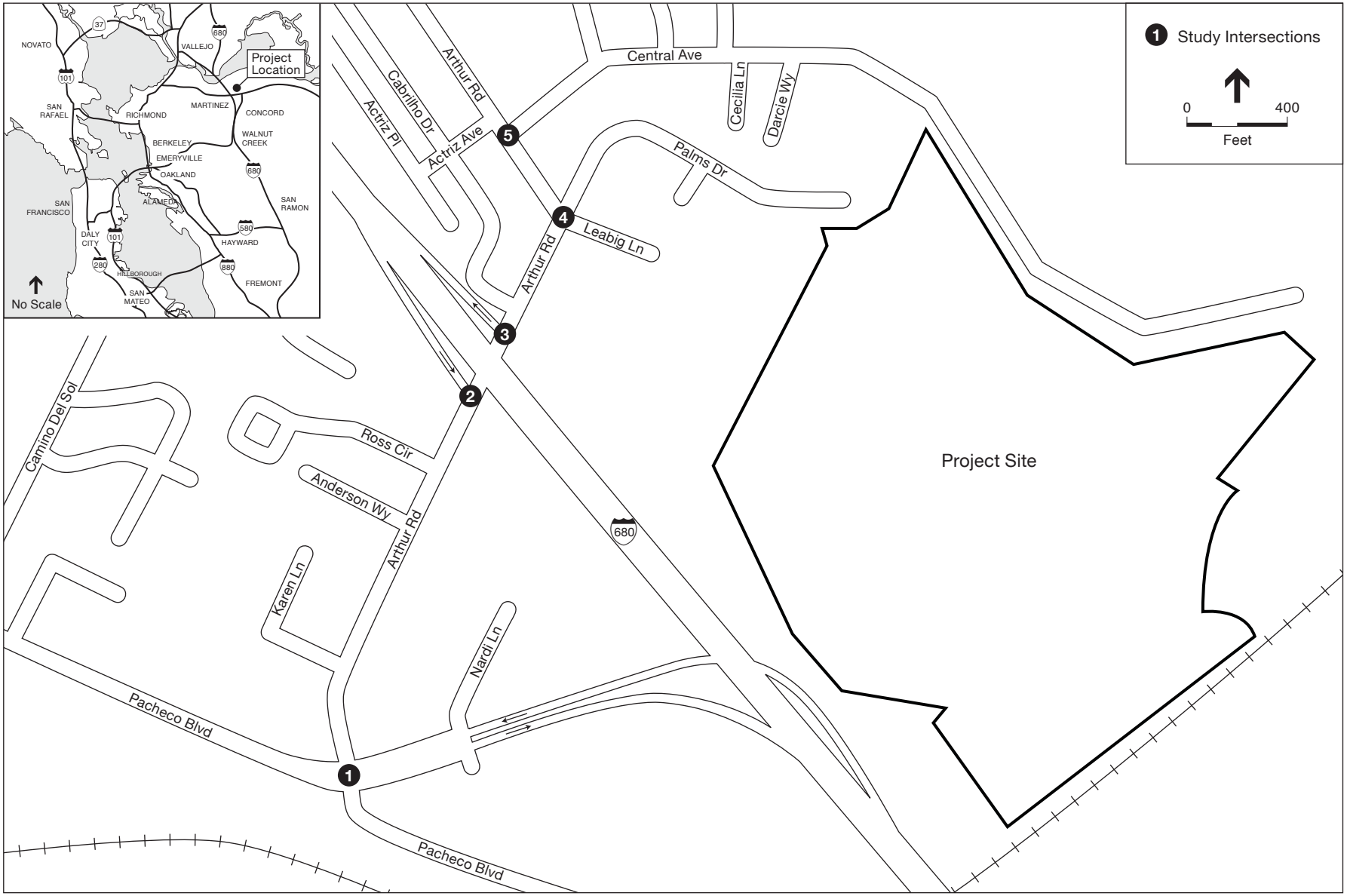
Setting

Figure 4.L-1 shows the location of the project site in relation to the nearby roadway system and the associated key roadways and intersections.

Key Roadways

Interstate 680 ("I-680") is a major north-south commuter route for Central Contra Costa County residents as well as commuters from Eastern Contra Costa and Solano Counties. The Concord BART station, Martinez Intermodal Facility, and Walnut Creek and Pleasant Hill BART stations can all be accessed from I-680. I-680 encompasses approximately 70 miles of freeway connecting at Interstate 80 in Cordelia and traveling south through the Diablo Valley, ending at the US 101 and Interstate 280 interchange in San Jose. Access to the freeway in the vicinity of the project site includes the unsignalized ramps (southbound off and northbound on) at Arthur Road and the signal controlled ramps (southbound on and northbound off) at Pacheco Boulevard. Full access to State Route 4 ("SR-4") is provided from Pacheco Boulevard approximately 1 mile south of Arthur Road. SR 4 provides a full interchange with I-680 east of Pacheco Boulevard. Estimates show annual average daily traffic ("AADT") volumes of 115,000 vehicles on I-680 near the Arthur Road ramps (Caltrans).

Pacheco Boulevard is a two-to-four-lane arterial roadway extending from a residential area south of downtown Martinez, southeast under SR-4, along I-680 to Center Avenue where it becomes Contra Costa Boulevard. The speed limit on this road is 35 miles per hour. It is a primary access roadway to and from I-680 south and downtown Martinez. Estimated average daily traffic ("ADT") on Pacheco Boulevard north of Arthur Road is 13,900 vehicles and 5,350 daily vehicles south of Arthur Road.



SOURCE: ESA

Bayview Residential Project Transportation Impact Analysis . 208078

Figure 4.L-1
Project Location Map and Study Intersections

Local Residential Streets

In addition to the regionally significant routes identified above, the following local roads are important to the project area:

Arthur Road is a two-lane collector roadway generally west of the project site. The speed limit on this road is 25 miles per hour. On-street, parallel vehicle parking occurs in the vicinity of Central Avenue and Palms Drive on Arthur Road. Traffic volumes on this road north of the I-680 northbound on-ramp are estimated at 3,500 vehicles per day. Arthur Road is a primary access road to I-680 for neighborhoods adjacent to the project site.

Central Avenue is a two-lane neighborhood roadway with parking on either side of the street. Central Avenue is currently not a through street and has been proposed as the main access roadway to the project site. The County maintained section of this street (between Arthur Road and Darcie Way) has a 30 foot curb-to-curb width and has sidewalks on at least one side of the street for the entire length of the segment. The unimproved segment from east of Darcie Way to the project site entrance is a gravel surfaced road with a generally 20 foot wide travel way. The estimated ADT on this road is just under 2,000 vehicles.

Palms Drive is a local residential roadway with some parking on either side of the street. The road is not a through street and has been proposed as a second access roadway to the project site. The travel way width of this road varies but is generally no wider than 20 feet. There are no curbs or sidewalks and the roadway surface which transitions from asphalt to gravel is in poor condition. The estimated ADT on this road is less than 300 vehicles.

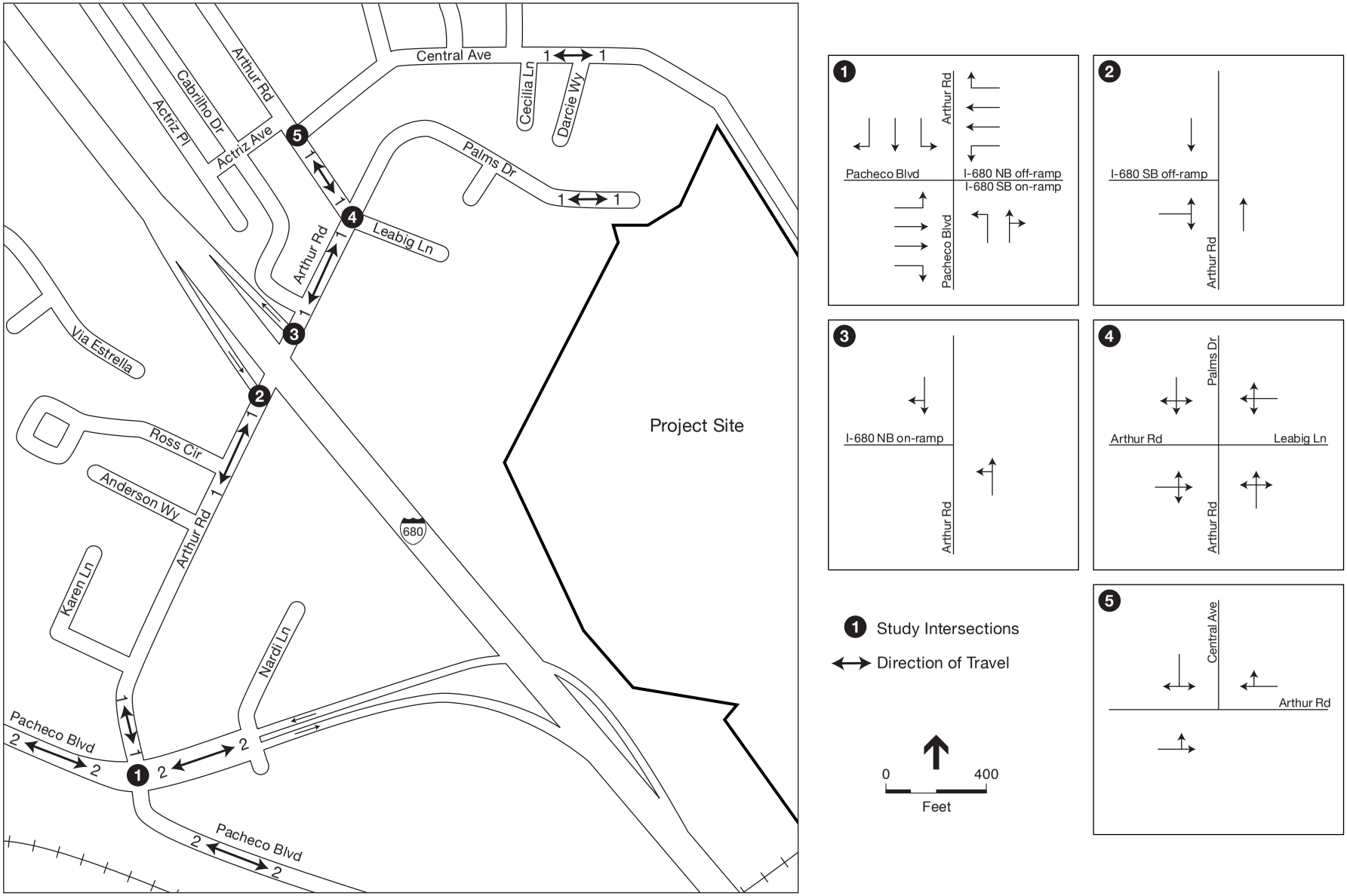
Study Intersections

The following intersections were chosen for analysis in accordance with the CCTA's guidelines (CCTA, 2006) which state that the analysis should include any signalized intersection, to which at least 50 project trips would be added. One signalized and four local (unsignalized) intersections on Arthur Road near the project site were included in the analysis. Figure 4.L-1 shows the location of the study intersections, while **Figure 4.L-2** shows the intersection lane configurations and traffic control (signal or stop signs). The five study intersections are:

1. Arthur Road and Pacheco Boulevard (signalized)
2. Arthur Road and I-680 SB Off-Ramp (stop controlled)
3. Arthur Road and I-680 NB On-Ramp (stop controlled)
4. Arthur Road and Palms Drive (stop controlled)
5. Arthur Road and Central Avenue (stop controlled)

Bicycle and Pedestrian Facilities

An inventory of existing bicycle and pedestrian facilities within the project area indicated that there is a lack of well connected pedestrian facilities between the project site and the existing residential neighborhoods. There is a section (estimated 500 feet) of unimproved roadway



SOURCE: ESA

Bayview Residential Project Transportation Impact Analysis . 208078

Figure 4.L-2
Existing Lane Configurations

between the project site to the east of Darcie Way on Central Avenue that does not provide sidewalks or a path. Sidewalks are currently provided along most sections of Arthur Road, Central Avenue and the east side of Pacheco Boulevard. Palms Drive does not have sidewalks and provides limited and intermittent shoulder widths. A Pedestrian-actuated crossing is provided at the signalized intersection of Arthur Road and Pacheco Boulevard and the remaining unsignalized intersections all provide crosswalks with the exception of Arthur Road and Palms Drive.

An on-street (Class III) bicycle route is provided on Pacheco Boulevard. Bicycle facilities are classified as Class I, II or III as follows:

- Class I bike paths are physically separated from motor vehicle and pedestrian traffic;
- Class II on-street bike lanes are defined by a painted stripe;
- Class III bike routes are represented only by posted route signs.

The Countywide Bicycle and Pedestrian Plan (December 2003) identifies Pacheco Boulevard as a designated part of the county bikeway network. It is a Class III bicycle route between Downtown Martinez and Sunrise Drive. The remainder of Pacheco Boulevard from Sunrise Drive to Contra Costa Boulevard is identified as a proposed on-street (Class III) route.

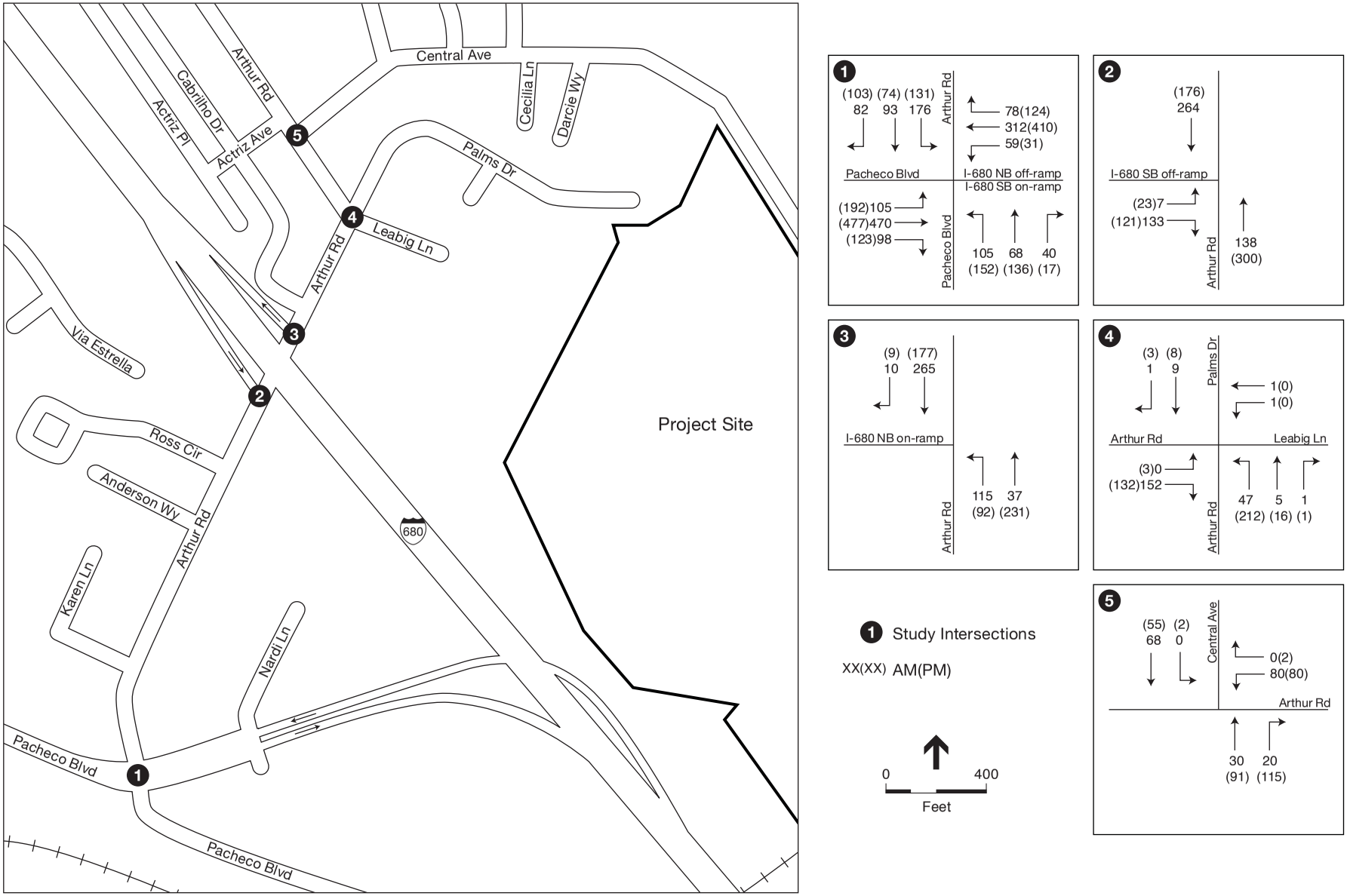
Public Transit

Public transit service in the area is limited. Service is provided by the County Connection, operated by the Central Contra Costa Transit Authority ("CCCTA") which provides paratransit services and operates Route 19. This route connects the Martinez Amtrak Station to the Concord BART station via Pacheco Boulevard. Route 19 operates every two hours between approximately 6:00 a.m. and 7:00 p.m. weekdays. This route has stops on Pacheco Boulevard at Arthur Road, about two-thirds of a mile from the project site. Because of relatively infrequent headways, Route 19 offers a limited ability to meet commuter needs.

Existing Conditions

Existing Traffic Volumes at Study Intersections

To obtain existing traffic volumes, peak period turning movement counts were conducted during a weekday morning (7:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) at the study intersections in March 2008. The peak period data indicates that the weekday a.m. peak hour typically occurs from 7:00 to 8:00 a.m. and the weekday p.m. peak hour typically occurs from 4:30 to 5:30 p.m. These time periods were selected as the traffic count periods because the combination of existing background and project-generated traffic is anticipated to be highest during these peak hours. **Figure 4.L-3** presents the peak hour volumes for the weekday morning and weekday afternoon.



SOURCE: ESA

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Figure 4.L-3

Existing AM and PM Peak Hour Traffic Volumes

Intersection Analysis Methodology

Transportation engineers and planners commonly use a grading system called level of service ("LOS") to measure and describe the operational status of a local roadway network. LOS can be used to describe an intersection's operation, ranging from LOS A (indicating free-flow traffic conditions with little or no delay) to LOS F (representing over-saturated conditions where traffic flows exceed design capacity, resulting in long queues and delays).

For signalized intersections, traffic conditions were evaluated using the CCTA Level of Service ("CCTALOS") methodology as outlined in CCTA's *Technical Procedures*. The CCTALOS methodology relates a service level grade to volume-to-capacity (v/c) ratio. The v/c ratio relates the total traffic volume for critical opposing movements to the theoretical capacity for those movements. The relationships between level of service and v/c ratios are presented in **Table 4.L-1**.

TABLE 4.L-1
SIGNALIZED INTERSECTION LEVEL OF SERVICE CRITERIA

Level of Service	Description	Sum of Critical V/C Ratio
A	Uncongested operations, all queues clear in a single cycle.	≤ 0.60
B	Uncongested operations, all queues clear in a single cycle.	0.61 - 0.70
C	Light congestion, occasional backups on critical approaches.	0.71 - 0.80
D	Significant congestion of critical approaches, but intersection remains functional. Some vehicles required to wait through more than one cycle during brief periods. No long queues form.	0.81 - 0.90
E	Severe congestion with long standing queues on critical approaches. Blockage may occur if intersection does not provide protected left-turns. Volumes approaching capacity. Queues may extend into adjacent intersections	0.91 - 1.00
F	Represents conditions at capacity, with extremely long delays. Total breakdown, stop and go conditions.	> 1.00

SOURCE: Contra Costa Transportation Authority, *Technical Procedures*, 1997.

For unsignalized (side street stop-controlled) intersections, the 2000 *Highway Capacity Manual* method for unsignalized intersections was used. At side-street stop-controlled intersections, an LOS rating is calculated for each minor movement based on control delay; the movement with the highest delay is reported. Control delay includes deceleration, total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line, and acceleration. **Table 4.L-2** summarizes the relationship between delay and LOS for unsignalized intersections.

Intersection Level of Service Policies

The Project site is in an unincorporated area of Contra Costa County. Intersections located within these areas that are not on a "Route of Regional Significance" are to maintain LOS D (v/c ratio up to 0.89) or better operations. For intersections located along "Routes of Regional Significance",

TABLE 4.L-2
UNSIGNALIZED INTERSECTION LEVEL OF SERVICE CRITERIA

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no delays	≤ 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

SOURCE: Transportation Research Board, *Highway Capacity Manual*, 2000.

LOS thresholds have been set in the *2004 Update to the Contra Costa Countywide Comprehensive Transportation Plan* (CCTA, 2004). The plan calls for maintaining low LOS D (v/c ratio up to 0.85) at signalized intersections on suburban arterial routes such as Pacheco Boulevard. For purposes of this EIR, the policy for side-street stop controlled intersections has been set to maintain LOS D or better on all approaches.

Freeway Segment Level of Service Policies

Operational conditions along county freeways are periodically reported by CCTA as part of its Congestion Management Program ("CMP"). The current status of I-680 operations in the project vicinity has been documented by the CCTA in the *2007 Congestion Management Program (CMP) Monitoring Report* (CCTA, 2008). The LOS standard for I-680 between the Benicia Bridge and SR 4 is LOS F, the worst level of service.

In addition to the CCTA-established LOS standards for I-680, the Measure C-1988-established TRANSPAC Regional Transportation Committee has set traffic service objectives ("TSOs") for I-680 as a "Route of Regional Significance".[1] The TSO measurement unit most directly indicative of congestion levels is the Delay Index, which compares point-to-point travel time under free-flow conditions with congested (i.e., peak period) conditions. For example, a Delay Index of 2.0 means the point-to-point travel time for a given corridor under congested conditions is twice as long as under free-flow conditions. The *Contra Costa Countywide Comprehensive Transportation Plan* sets a Delay Index (objective) for I-680 at 2.0, and a peak hour average speed of 30 mph (CCTA, 2004).

Arterial Roadway Segment Level of Service Methodology

CCTA's *Technical Procedures* do not have a specified methodology for roadway segment analysis. For this analysis, service volumes presented in the Transportation Research Board's Highway Capacity Manual (Transportation Research Board, 2000) were utilized to assess peak hour, peak direction road segment operations for Pacheco Boulevard. Pacheco Boulevard is a four

[1] Measure C is a transportation sales tax initiative that was approved by voters in Contra Costa County in 1988.

lane arterial (two lanes in each direction) in the vicinity of Arthur Road with a posted speed limit of 35 mph, and is assumed to be a Class III facility for an arterial with five signals per mile. **Table 4.L3** shows the LOS grades for a Class III arterial road.

TABLE 4.L-3
LOS GRADES FOR CLASS III ARTERIALS

Level of Service	Class III – 2 lanes
	Peak Direction Volume (veh/hr)
C	= 1030
D	1030 - 1600
E	1600 - 1690
F	> 1690

SOURCE: Transportation Research Board, *Highway Capacity Manual*, 2000 (pg. 10-10, Exhibit 10-7).

The Traffic Service Objectives for Pacheco Boulevard (Marina Vista to Center Avenue) are a Delay Index of 2.0 and a peak hour average speed of 15 mph.

Residential Streets Segment Analysis Methodology

CCTA's *Technical Procedures* do not have a specified methodology for the analysis of minor and collector residential street segments. This analysis considers the effects of traffic volume changes on residential streets and assesses those changes using the Traffic Infusion on Residential Environments (TIRE) index. TIRE is a numerical representation of a resident's perception of the effect of street traffic on activities such as walking, cycling and playing, and on daily tasks such as maneuvering an auto out of a residential driveway. Streets are designated with a TIRE index (on a scale from 0 to 5) based on the existing daily traffic volume. Streets with TIRE indices above 3 are considered to be traffic-dominated, while those with indices below 3 are better suited for residential activities. A traffic volume change that would cause an increase of 0.1 or more in the TIRE index would be noticeable to street residents. **Table 4.L-4** shows the five TIRE index levels.

TABLE 4.L-4
TIRE INDEX LEVELS

Index	Daily Traffic Volume	Residential Street Environment
0	1	----
1	10	Cul-de-sac street with one home
2	100	Cul-de-sac street with 2 to 15 homes
3	1,000	2-lane minor street
4	10,000	2-lane collector or arterial street
5	100,000	2 to 6-lane arterial street

SOURCE: Goodrich Transportation Group.

Existing Intersection Operations

Existing operational conditions at the signalized study intersections were analyzed using the CCTALOS software package, while the unsignalized intersection analysis was based on the methodology outlined in the 2000 *Highway Capacity Manual* (Transportation Research Board, 2000). As shown in **Table 4.L-5**, most of the study intersections currently operate at LOS A, the best operating level, during both analysis periods.

TABLE 4.L-5
EXISTING INTERSECTION LEVEL OF SERVICE

	Intersection	Control[1]	Peak Hour	Delay or V/C[2,3]	LOS
1	Arthur Road and Pacheco Boulevard	Signal	AM PM	0.38 0.45	A A
2	Arthur Road/I-680 SB Off-Ramp	SSSC	AM PM	10.4 10.9	B B
3	Arthur Road/I-680 NB On -Ramp	SSSC	AM PM	7.6 7.8	A A
4	Arthur Road/Palms Drive	Yield	AM PM	9.9 10.7	A B
5	Arthur Road/Central Avenue	SSSC	AM PM	9.5 10.2	A B

1 Signal = Signalized intersection, SSSC = Side-street stop-controlled intersection
2 Volume-to-capacity (v/c) ratio determined for signalized intersections using the CCTA LOS methodology.
3 Average control delay per vehicle (in seconds) for the worst-case stop controlled movement or approach at side-street stop-controlled intersections according to the *Highway Capacity Manual* (Transportation Research Board, 2000).

SOURCE: ESA, March 2008.

Existing Freeway Operations

Average daily traffic ("ADT") and peak hour volumes (both directions) on the I-680 freeway segment in the project vicinity are shown in **Table 4.L-6**. The volumes were obtained from Caltrans published data.

TABLE 4.L-6
AVERAGE TRAFFIC VOLUMES ON I-680

Highway Segment	Daily Volume	Peak Hour Volume
Marina Vista Avenue to Arthur Road	115,000	8,900
South of Pacheco Boulevard Ramps	110,000	8,500

SOURCE: Department of Transportation, http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2004all/r002-4i.htm, 2005

Operational conditions along county freeways are periodically reported by CCTA as part of its CMP. The current status of I-680 operations in the project vicinity has been documented by the CCTA in the *Countywide Comprehensive Transportation Plan Traffic Service Objective Monitoring Report* (CCTA, 2004a). The LOS standard for I-680 between the Benicia Bridge and SR 4 is LOS F, the worst level of service. I-680 between Marina Vista Avenue and Arthur Road operates at LOS E in the southbound direction during the a.m. peak hour and at LOS F in the northbound direction during the p.m. peak hour. South of the Pacheco Boulevard ramps, I-680 operates at LOS E in the southbound direction during the a.m. peak hour and LOS F in the northbound direction during the p.m. peak hour.

As reported in the Traffic Service Objective Monitoring Report, I-680 between the Benicia Bridge and SR 4 currently meets the a.m. peak hour Delay Index objective of 2.0 with a Delay Index of 2.0 in the southbound direction. I-680 fails to meet the service objective Delay Index of 2.0 during the p.m. peak hour (northbound). During the p.m. peak hour the Delay Index is 2.5 with average speeds of 25.79 mph.

Existing Arterial Roadway Operations

Peak hour road segment volumes and service levels for Pacheco Boulevard are shown in **Table 4.L-7**. Pacheco Boulevard north of Arthur Road currently operates at LOS C in both directions during the a.m. and the p.m. peak hours. Pacheco Boulevard south of Arthur Road also operates at LOS C during both the a.m. and p.m. peak hours.

The Delay Index for Pacheco Boulevard (between Marina Vista and Morello Avenue) currently meets the traffic service objective of 2.0 with a delay index of 1.2 northbound and 1.1 southbound during the a.m. peak hour and a delay index of 1.6 northbound and 1.1 southbound during the p.m. peak hour.

TABLE 4.L-7
PACHECO BOULEVARD ROAD SEGMENT LOS

Road Segment	Existing Volume / LOS (Direction)			
Pacheco Boulevard	AM Peak Hour		PM Peak Hour	
North of Arthur Road	673 / C (SB)	499 / C (NB)	792 / C (SB)	665 / C (NB)
South of Arthur Road	250 / C (SB)	213 / C (NB)	228 / C (SB)	305 / C (NB)

SOURCE: *Highway Capacity Manual* (Transportation Research Board, 2000).
ESA Traffic counts March 2008.

Existing Residential Streets Operations

The current estimated daily volumes on the key project residential streets fall into the low to moderate range on the TIRE index scale (**Table 4.L-8**).

TABLE 4.L-8
EXISTING TIRE INDEX – RESIDENTIAL ROAD SEGMENTS

Residential Streets	Daily Traffic	TIRE Index
Arthur Road (North of I-680 NB On- Ramp)	3,500	3.5
Central Avenue	1,895	3.3
Palms Drive	285	2.5

SOURCE: D.K. Goodrich Traffic Group
ESA Traffic counts March 2008. Assume PM peak volumes represent 10.5 percent of ADT.

Existing Plus Approved Development Conditions

To be consistent with CCTA *Technical Procedures* requirements for analyzing impacts of traffic generated by new development, this analysis evaluates traffic conditions under a scenario in which traffic from approved developments is added to the observed existing conditions.

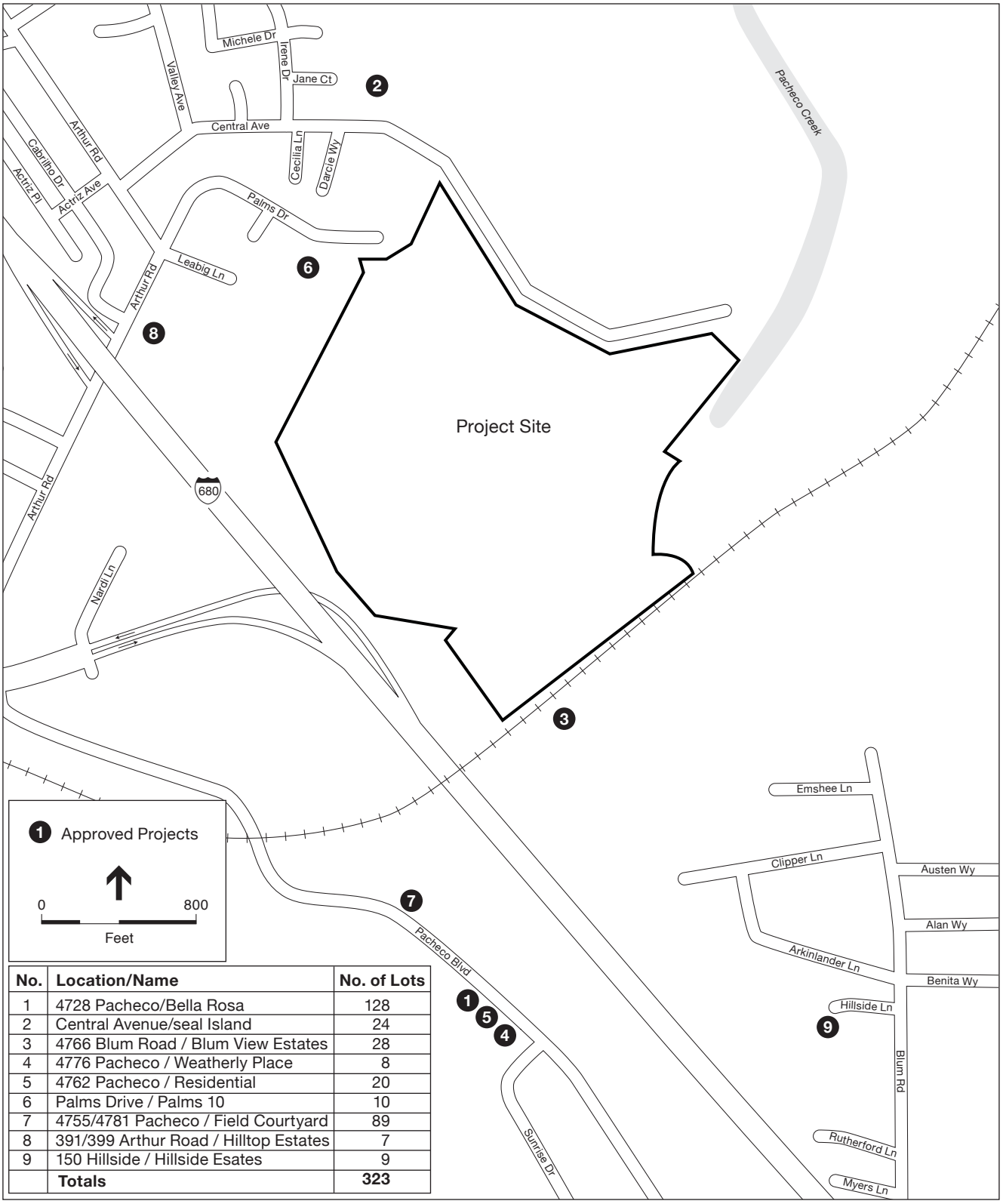
Trip Generation and Distribution

A list of approved but as yet incomplete projects in the project vicinity was developed in consultation with the County.[23] Trip generation was based on average trip rates presented in the Institute of Transportation Engineers (ITE), Trip Generation, 7th Edition (Land Use Code 210). **Figure 4.L-4** shows the approximate locations of the approved projects, and **Table 4.L-9** presents the approved projects list and associated trip generation results. As shown, the approved projects in the area would be expected to generate about 3,090 vehicle trips per day (242 trips during the a.m. peak hour and 326 vehicle trips during the p.m. peak hour).

Trip distribution for approved projects was based in part on existing travel patterns in the area and on a review of MTC's *Bay Area Travel Survey* (BATS) (MTC, 2008). The MTC survey shows all vehicle trip (employment, shopping, recreation, etc.) travel between 34 superdistricts in the Bay Area region. There are five superdistricts in the County and the project is located in superdistrict 21. For residential projects located along the Pacheco Boulevard corridor it was estimated (based on BATS) that approximately 60 percent of these trips would travel south toward the SR-4 / I-680 interchange and 40 percent to the north on Pacheco Boulevard. For projects located on Arthur Road, Central Avenue and Palms Drive trips were distributed based on current intersection turning movement volume counts and observed local travel patterns.

2 The list of approved but as yet incomplete projects used in this analysis included Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane), Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard) and Hilltop Estates (7-lot subdivision on 391-399 Arthur Road).

3 The Hilltop Estates project is no longer considered active and is not included in the cumulative scenarios in other sections of this EIR. However, it was considered a reasonably foreseeable project at the time the traffic analysis was conducted. Because its inclusion still represents a suitably conservative approach, it is included in the discussion herein.



No.	Location/Name	No. of Lots
1	4728 Pacheco/Bella Rosa	128
2	Central Avenue/seal Island	24
3	4766 Blum Road / Blum View Estates	28
4	4776 Pacheco / Weatherly Place	8
5	4762 Pacheco / Residential	20
6	Palms Drive / Palms 10	10
7	4755/4781 Pacheco / Field Courtyard	89
8	391/399 Arthur Road / Hilltop Estates	7
9	150 Hillside / Hillside Esates	9
	Totals	**323**

SOURCE: ESA

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Figure 4.L-4
Locations of Approved Projects

TABLE 4.L-9
APPROVED DEVELOPMENT TRIP GENERATION

No.	Location / Name	Land Use	Units	Weekday Daily	Weekday AM	Weekday PM
1	4728 Pacheco / Bella Rosa	Single-family	128	1,225	96	129
2	Central Avenue / Seal Island	Single-family	24	230	18	24
3	4766 Blum Road / Blum View Estates	Single-family	28	268	21	28
4	4776 Pacheco / Weatherly Place	Single-family	8	77	6	8
5	4762 Pacheco / Residential	Single-family	20	191	15	20
6	Palms Drive / Palms 10	Single-family	10	96	8	10
7	4755/4781 Pacheco / Field Courtyard	Single-family	89	852	67	90
8	391/399 Arthur Road / Hilltop Estates	Single-family	7	67	5	7
9	150 Hillside / Hillside Estates	Single-family	9	86	7	9
	Totals		**323**	**3,091**	**242**	**326**

SOURCE: Contra Costa County Community Development May 2008. ITE Trip Generation, 7th Edition.

Planned Roadway Improvements

There are no planned roadway improvements in the project vicinity that would impact the existing plus approved development scenario.

Existing Plus Approved Development Intersection Operations

Table 4.L-10 shows the associated LOS calculation results under Existing Plus Approved Development scenario. The results indicate that operations at most study intersections would not change substantially as compared to Existing Conditions. All study intersections are estimated to operate at LOS B or better during the morning and evening peak hours.

Regulatory Framework

Agencies with Jurisdiction Over Transportation in the Project Area

Contra Costa County has jurisdiction over all County streets and County-operated traffic signals. In addition, several regional agencies, including TRANSPLAN Regional Transportation Planning Committee and the Metropolitan Transportation Commission (MTC), oversee and coordinate funding for regional transportation improvement programs affecting the County. The California Department of Transportation (Caltrans) has jurisdiction of all freeways, freeway ramps, and other state routes, such as SR 4.

Transit service providers in the area, such as Central Contra Costa Transit Authority (CCCTA), have jurisdiction over their respective services. These various jurisdictional agencies, their responsibilities and associated funding, are more specifically described below.

TABLE 4.L-10
EXISTING PLUS APPROVED DEVELOPMENT CONDITIONS
INTERSECTION LEVEL OF SERVICE (LOS)

	Intersection	Control[1]	Peak Hour	Delay or V/C[2,3]	LOS
1	Arthur Road and Pacheco Boulevard	Signal	AM PM	0.42 0.48	A A
2	Arthur Road/I-680 SB Off-Ramp	SSSC	AM PM	11.5 11.3	B B
3	Arthur Road/I-680 NB On -Ramp	SSSC	AM PM	8.4 7.9	A A
4	Arthur Road/Palms Drive	Yield	AM PM	10.1 11.1	A B
5	Arthur Road/Central Avenue	SSSC	AM PM	9.6 10.4	A B

NOTES: Results in **bold** represent unacceptable levels of service.

1 Signal = Signalized intersection, SSSC = Side-street stop-controlled intersection
2 Volume-to-capacity (v/c) ratio determined for signalized intersections using the CCTA LOS methodology.
3 Average control delay per vehicle (in seconds) for the worst-case stop controlled movement or approach at side-street stop-controlled intersections according to the *Highway Capacity Manual* (Transportation Research Board, 2000).

SOURCE: ESA 2008.

Contra Costa Transportation Authority (CCTA). In 1988, voters in Contra Costa County passed the Measure C-1988 Growth Management Program, increasing the county sales tax by 1/2 percent for 20 years to finance construction of a specified set of public transit and highway improvement projects. This ballot measure also created the Contra Costa Transportation Authority (CCTA) to oversee implementation of the improvements contained in Measure C-1988, including the extension of BART to Pittsburg/Bay Point. CCTA has also been assigned responsibility as the Congestion Management Agency (CMA) that sets state and federal funding priorities for improvements affecting the Contra Costa County Congestion Management Program ("CMP") roadway system. CCTA-designated CMP roadway system components in the project area include SR 4, Willow Pass Road, and Bailey Road. Under state CMP provisions, any improvements to these CMP components that are to receive state or federal funding must be adopted by the CCTA and included in the Capital Improvement Program (CIP) component of the CCTA-prepared CMP document, which must be updated biennially. While congestion management programs are no longer required by state law, Contra Costa County, along with most other counties in the Bay Area, has opted to continue with its CMP. To carry out the policies and actions of Measure C-1988 and the CMP, CCTA established procedures for analyzing impacts of traffic from new development.

Caltrans. Caltrans has authority over the state highway system, including mainline facilities and interchanges. Caltrans must be involved in and approve the planning and design of all improvements involving state highway facilities. State highway facilities in the project area include I-680 and its interchanges at Pacheco Boulevard and Arthur Road.

Local and Regional Plans and Policies

Central Contra Costa Action Plans 2000 Update

The current Central Contra Costa Updated Action Plans for Routes of Regional Significance, adopted July 13, 2000 (*Central Contra Costa Action Plan)*, establishes the following roads near the project site as "Routes of Regional Significance":

- I-680;
- Pacheco Boulevard between Marina Vista and Center Avenue (TRANSPAC, 2000).

The *Central Contra Costa Action Plan* also sets forth Traffic Service Objectives ("TSOs") for these routes.

- For I-680, the TSOs include a maximum Delay Index of 2.0 and a minimum peak hour speed average speed = 30 mph.
- For I-680, peak hour vehicle occupancy rate (VOR) = 1.4 persons per vehicle.
- For Pacheco Boulevard, the *Central Contra Costa Action Plan* TSOs include a maximum Delay Index of 2.0 and a minimum average speed = 15 mph.
- For Pacheco Boulevard, Level of service of mid-LOS D or better (v/c ratio of 0.85 or less) at signalized intersections.
- For Pacheco Boulevard, peak hour vehicle occupancy rate (VOR) = 1.2 persons per vehicle.

Congestion Management Program

The Contra Costa County Congestion Management Program ("CMP") establishes level of service standards for highway segments and specific monitoring intersections along CCTA-identified "Routes of Regional Significance". In the project vicinity, the CMP-established level of service standard for I-680 is LOS F. There are no CMP monitoring intersections in the project vicinity.

Contra Costa County General Plan. The current Transportation and Circulation Element of the *Contra Costa County General Plan* includes the following policies pertinent to consideration of proposed development projects in the County (Contra Costa County, 2005).

Circulation and Access

Policy 5-2: Appropriately planned circulation system components shall be provided to accommodate development compatible with policies identified in the Land Use Element.

Policy 5-9: Existing circulation facilities shall be improved and maintained by eliminating structural and geometric design deficiencies.

Policy 5-15: Curbs and sidewalks shall be provided in appropriate areas.

Policy 5-16: Emergency response vehicles shall be accommodated in development project design.

Policy 5-43: Provide special protection for natural topographic features, aesthetic views, vistas, hills and prominent ridgelines at "gateway" sections of scenic routes. Such "gateways" are located at unique transition points in topography or land use, and serve as entrances to regions of the County.

Impacts and Mitigation Measures

Significance Criteria and Analysis Methodology

Based on Appendix G of the CEQA *Guidelines*, a traffic increase from the project or from cumulative development is considered to be a significant impact if the associated changes to the transportation system would:

- Conflict with adopted transportation-related plans and goals of the community where it is located.
- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- Substantially increase hazards due to a design feature or incompatible uses, including construction traffic that unduly degrades roadways leading to a potential roadway failure.

These general CEQA provisions provide the basis for the specific criteria that have been applied in this EIR to evaluate the significance of project-related traffic increases. The following standards of significance are based on the Contra Costa County General Plan and the TSO's outlined in the *Central Contra Costa Action Plan* (TRANSPAC, 2000). The project would have a significant effect on transportation if it would:

- Cause operation of a signalized intersection on Pacheco Boulevard to degrade below an acceptable high-LOS D (v/c greater than 0.85) or worse;
- Cause the v/c ratio to increase by 0.01 or more at an intersection operating at unacceptable service levels without the project;
- Cause a side-street stop controlled approach to an unsignalized intersection to decline to unacceptable LOS E or worse;
- Increase the total volume entering an unsignalized intersection by one percent or more with a side-street stop controlled approach operating at unacceptable LOS E or worse without the project;
- Increase volumes at an unsignalized intersection to meet the peak hour traffic signal warrant;
- Cause the Delay Index on I-680 to increase to greater than 2.0;
- Cause the Delay Index to increase by 0.1 or more on I-680 where the Delay Index is 2.0 or greater without the project;
- Fail to maintain Caltrans target LOS at the transition between LOS "C" and LOS "D" on State highway facilities; or if an existing State highway facility is operating at less than the appropriate target LOS, maintaining the existing measure of effectiveness (MOE).

- Cause the Delay Index on Pacheco Boulevard to increase to 2.0 or greater;
- Cause the Delay Index to increase by 0.1 or more on Pacheco Boulevard where the Delay Index is 2.0 or greater without the project;
- Result in projected on-site parking demand that would exceed the proposed on-site parking supply on a regular and frequent basis;
- Result in inadequate on-site vehicle and pedestrian circulation;
- Result in inadequate vehicular or emergency vehicle site access;
- Result in potential safety conflicts for pedestrians or bicyclists, or fail to provide adequate bicycle and pedestrian access; or,
- Increase transit demand above the service levels or the capacity of transit vehicles such that it would increase the average ridership on Central Contra Costa Transit Authority lines by three percent at bus stops where the average load factor with the project in place would exceed 125 percent over a peak hour.

Impact L1: Project construction would result in temporary increases in truck traffic and construction worker traffic. (Significant)

Construction activities for the project would generate off-site traffic that would include the initial delivery of construction vehicles and equipment to the project site, the daily arrival and departure of construction workers, the delivery of materials throughout the construction period and removal of construction debris. Deliveries would include shipments of concrete, lumber, and other building materials for on-site structures, utilities (e.g., plumbing equipment and electrical supplies) and paving and landscaping materials.

Construction-generated traffic would be temporary, and therefore, would not result in any long-term degradation in operating conditions on roadways in the project vicinity. The impact of construction-related traffic would be a temporary and intermittent lessening of the capacities of streets in the project site vicinity because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. However, given the proximity of the project site to regional roadways (i.e., I-680), construction trucks would have relatively direct routes. Most construction traffic would be dispersed throughout the day. Thus, the temporary increase would not significantly disrupt daily traffic flow on roadways in the project site vicinity.

However, truck movements would have an adverse effect on traffic flow in the project site vicinity. As such, the impact is considered to be significant. Mitigation Measure L.1 would mitigate this impact to a less-than-significant level.

> **Mitigation Measure L.1:** The project sponsor and construction contractor(s) shall develop and submit a Construction Management and Traffic Control Plan for the review and approval of the County's Public Works Department. The Construction Management and Traffic Control Plan shall be submitted to the Public Works Department at least 60 days prior to the initiation of construction activities:

- A set of comprehensive traffic control measures, including scheduling of major truck trips, including grading haul trucks and deliveries, to avoid peak traffic hours, types of vehicles and maximum speed limits for each type of vehicle, expected daily truck trips, staging areas, emergency routes and access, detour signs if required, lane closure procedures, flag person requirements, signs, cones for drivers, a street sweeping plan and designated construction access routes.

- Identification of haul routes for movement of construction vehicles that would minimize impacts on motor vehicle, bicycle and pedestrian traffic, circulation and safety, and specifically to minimize impacts to the greatest extent possible on streets in the project area.

- Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures would occur.

Significance after Mitigation: Less than Significant.

Impact L.2: Project-generated increases in heavy truck traffic on area roadways could result in substantial damage to or wear of public roadways. (Significant)

The use of large trucks to transport equipment and material to and from the project site could affect road conditions on the designated construction route by increasing the rate of road wear. The degree to which this impact would occur depends on the roadway design (pavement type and thickness) and the existing condition of the road. Freeways, such as I-680, and Arterials, such as Pacheco Blvd., are designed to handle a mix of vehicle types, including heavy trucks. The project's impacts are expected to be negligible on those roads. Residential neighborhood roads (Arthur Road, Central Avenue and Palms Drive) are more susceptible to increased wear and damage due to heavy truck operations. Mitigation Measure L.2 would mitigate the potential for excessive road wear due to project construction trucks, to a less- than-significant level.

> **Mitigation Measure L.2:** Prior to commencement of project construction activities, which would include any construction-related deliveries to the site, the project sponsor shall document to the satisfaction of the Contra Costa County Public Works Department, the road conditions of the construction route that would be used by project construction-related vehicles. The project sponsor shall also document the construction route road conditions after project construction has been completed. The project sponsor shall repair roads that are damaged by construction related activities to County standards and to a structural condition equal to that which existed prior to construction activity. As a security to ensure that damaged roads are adequately repaired, the project sponsor shall make an initial monetary deposit, in an amount to be determined by the Department of Public Works, to an account to be used for roadway rehabilitation or reconstruction. If the County must ultimately undertake the road repairs, and repair costs exceed the initial payment, then the project sponsor shall pay the additional amount necessary to fully repair the roads to pre-construction conditions.

Significance after Mitigation: Less than Significant.

Existing Plus Approved Development Plus Project Impacts

Project Trip Generation

Trip generation for the project was based on data published by the Institute of Transportation Engineers (ITE) Trip Generation (7th Edition), land use code 220 (single-family detached housing). As shown in **Table 4.L-11**, the project is estimated to generate 1,560 daily vehicle trip ends (780 inbound and outbound daily vehicle trips). Peak hour project trip generation is expected to exceed 100 trips during the a.m. peak hour (123 vehicle trips) and the p.m. peak hour (165 vehicle trips).

Project Trip Distribution and Assignment

Project generated peak hour trips were distributed to the roadway network and assigned to intersection turning movements based on existing traffic count data and travel patterns. All project traffic would use Arthur Road for access to and from the site. **Figures 4.L-5A** and **4.L-5B** illustrate the distribution percentages of the project peak hour inbound and outbound traffic volumes respectively.

TABLE 4.L-11
PROJECT VEHICLE TRIP GENERATION

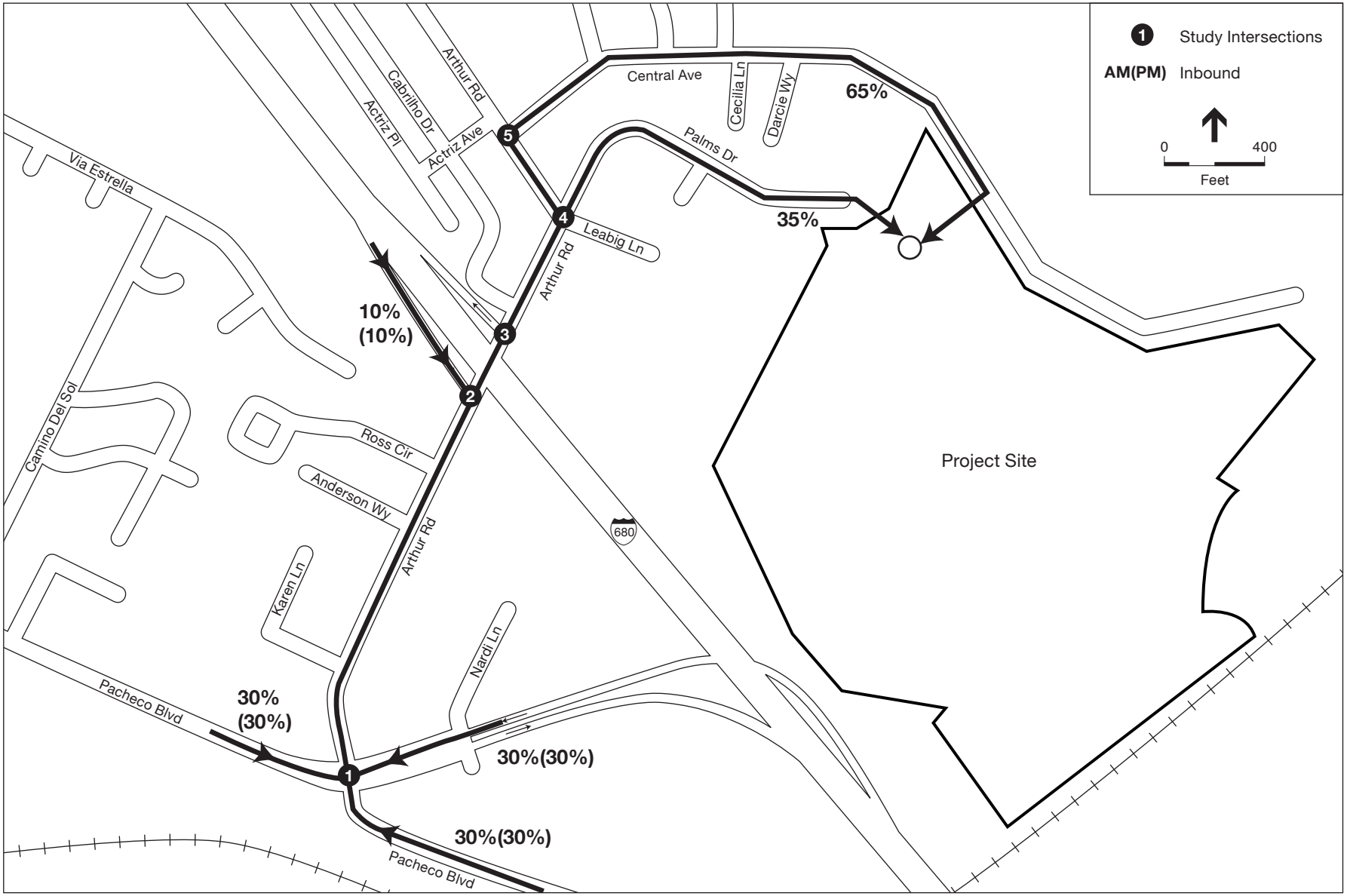
ITE Trip Rates - Land Use Code 220		9.57	0.25	0.75	0.75	0.63	0.37	1.01
			AM Peak Hour			**PM Peak Hour**		
Project Trip Generation	**Size (Lots)**	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Single-Family Housing	163	1,560	31	92	123	104	61	165

SOURCES: Institute of Transportation Engineers (ITE) Trip Generation, 7th Edition.

Impact L.3: The project would increase traffic volumes at nearby intersections. (Less than Significant)

Figure 4.L-6 illustrates the peak hour intersection traffic volumes under the Existing Plus Approved Development Plus Project scenario, and **Table 4.L-12** shows the estimated levels of service at the study intersections under this scenario. As shown, the study intersections operate at acceptable LOS B or better during the a.m. peak hour and the p.m. peak hour. The project would not degrade any of the study intersections to unacceptable service levels.

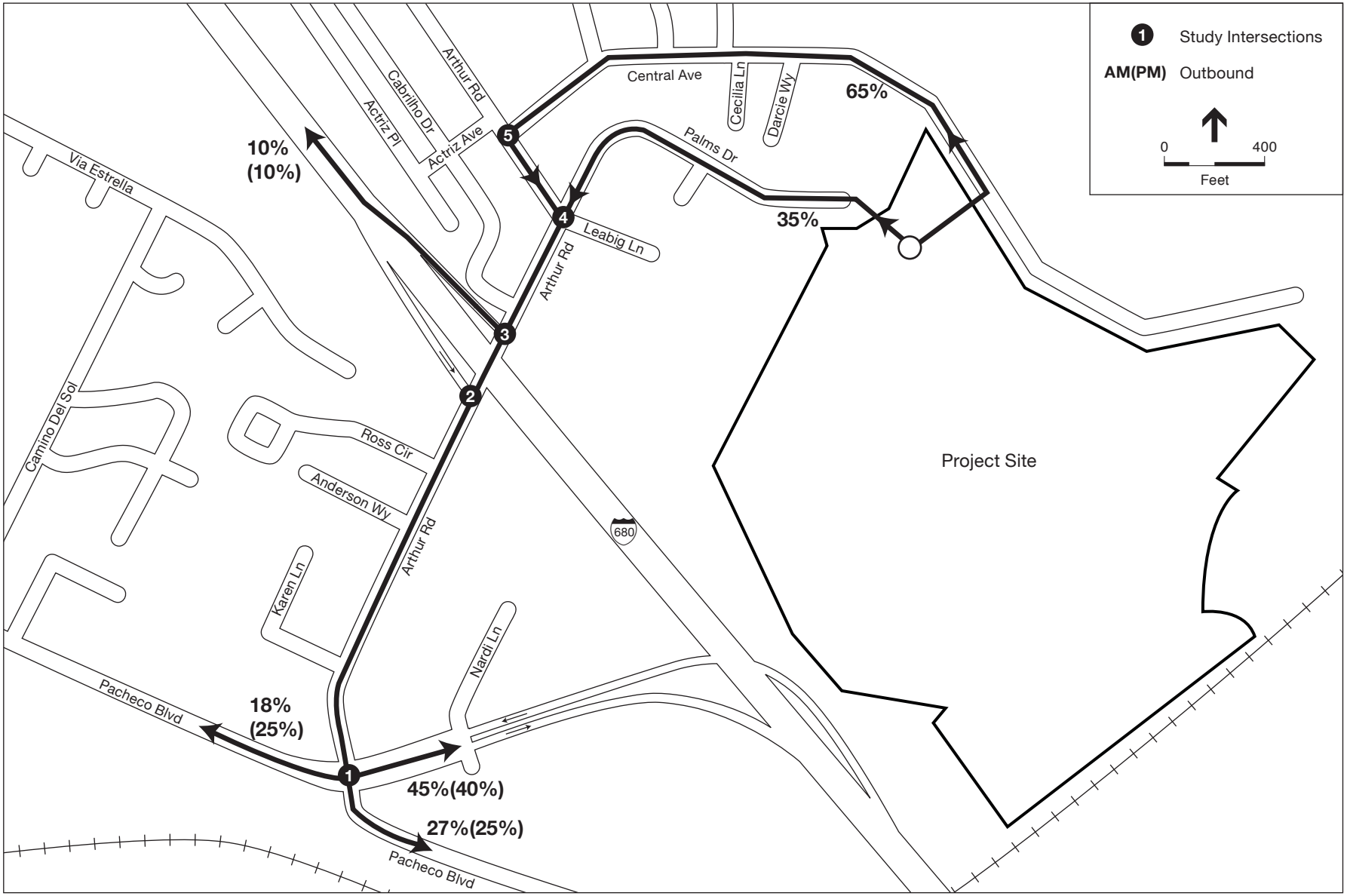
Mitigation: None required.



SOURCE: ESA

Bayview Residential Project Transportation Impact Analysis . 208078

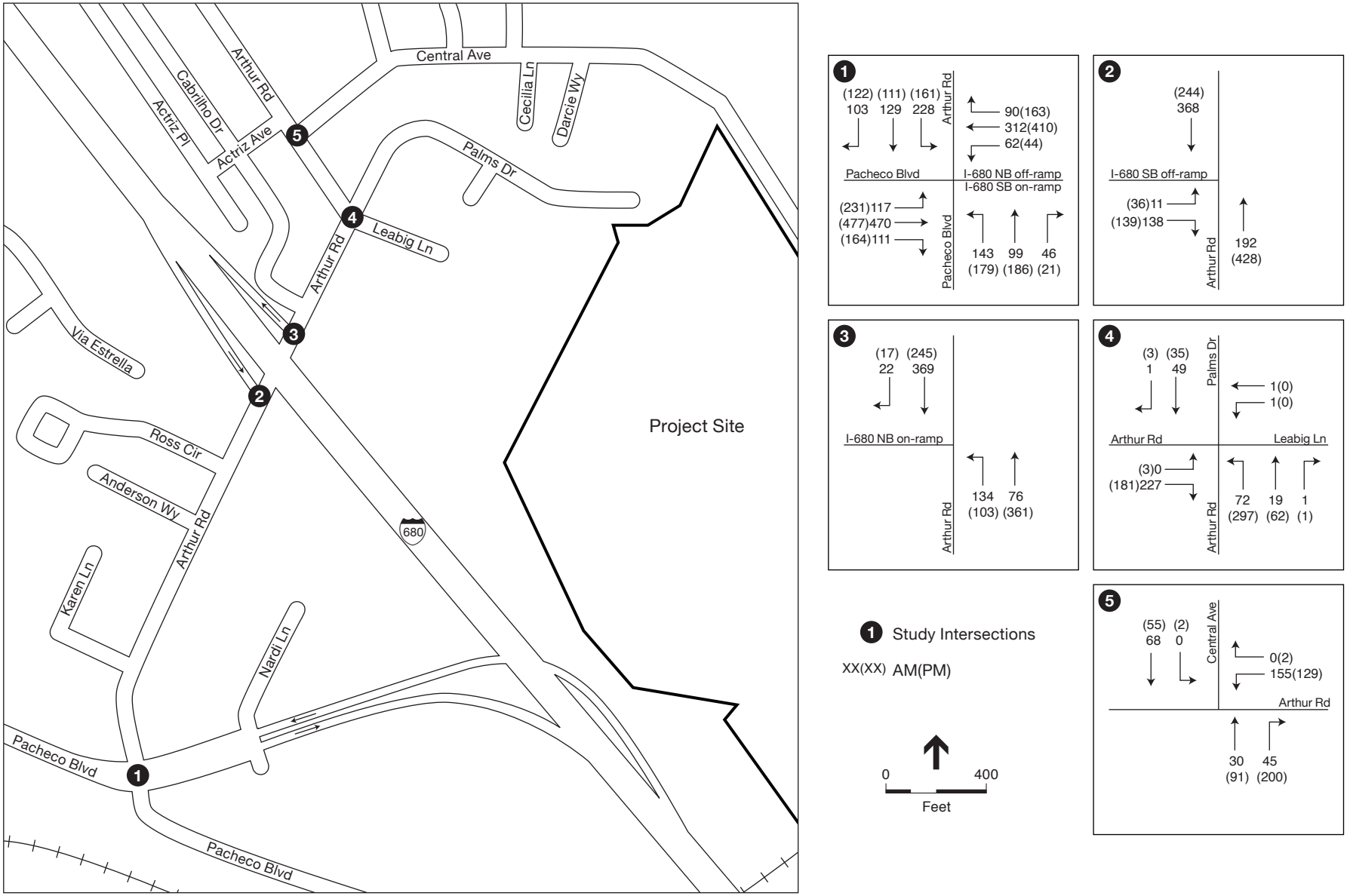
Figure 4.L-5A
Project Inbound Peak Hour
Trip Distribution



SOURCE: ESA

Bayview Residential Project Transportation Impact Analysis . 208078

Figure 4.L-5B
Project Outbound Peak Hour
Trip Distribution



SOURCE: ESA

Bayview Residential Project Transportation Impact Analysis . 208078

Figure 4.L-6

Existing + Approved Development + Project AM and PM Peak Hour Traffic Volumes

TABLE 4.L-12
EXISTING PLUS APPROVED DEVELOPMENT PLUS PROJECT CONDITIONS
INTERSECTION LEVEL OF SERVICE (LOS)

				Existing + Approved Development		Existing + Approved Development + Project	
	Intersection	Control[1]	Peak Hour	Delay or V/C[2,3]	LOS	Delay or V/C[2,3]	LOS
1	Arthur Road and Pacheco Blvd.	Signal	AM	0.42	A	0.45	A
			PM	0.48	A	0.54	A
2	Arthur Road/I-680 SB Off-Ramp	SSSC	AM	11.5	B	12.8	B
			PM	11.3	B	13.0	B
3	Arthur Road/I-680 NB On -Ramp	SSSC	AM	8.4	A	8.7	A
			PM	7.9	A	8.1	A
4	Arthur Road/Palms Drive	SSSC	AM	10.1	A	11.0	B
			PM	11.1	B	13.7	B
5	Arthur Road/Central Avenue	SSSC	AM	9.6	A	10.2	B
			PM	10.4	B	11.1	B

1 Signal = Signalized intersection, SSSC = Side-street stop-controlled intersection
2 Volume-to-capacity (v/c) ratio determined for signalized intersections using the CCTA LOS methodology.
3 Average control delay per vehicle (in seconds) for the worst-case stop controlled movement or approach at side-street stop-controlled intersections according to the *Highway Capacity Manual* (Transportation Research Board, 2000).

SOURCE: ESA, 2008.

Impact L.4: The project would increase traffic volumes on I-680. (Less than Significant)

The addition of project peak hour traffic volumes on the I-680 segments would not affect freeway levels of service. Under the Existing Plus Approved Development Plus Project scenario, I-680 between Marina Vista Avenue and Arthur Road would continue to operate at LOS E in the southbound direction during the a.m. peak hour and at LOS F in the northbound direction during the p.m. peak hour. South of the Pacheco Boulevard ramps, I-680 would continue to operate at LOS E in the southbound direction during the a.m. peak hour and LOS F in the northbound direction during the p.m. peak hour with project traffic.

I-680 between the Benicia Bridge and SR 4 would continue to meet a.m. peak hour Delay Index objective of 2.0 in the southbound direction and would fail to meet the service objective Delay Index of 2.0 during the p.m. peak hour (northbound) as under existing conditions. The addition of project peak hour traffic would not result in a Delay Index increase of 0.1 or more at either study segment or in either traffic flow direction.

The Caltrans target state highway LOS at the transition between LOS “C” and LOS “D” would not be met with the addition of project traffic, as is the case under existing conditions. However,

the addition of project traffic would not further degrade freeway operating conditions and therefore the existing measures of effectiveness (LOS and Delay Index) would be maintained.

Mitigation: None required.

Impact L.5: The project would increase traffic volumes on Pacheco Boulevard. (Less than Significant)

The project would contribute daily and peak hour traffic to Pacheco Boulevard. As shown in **Table 4.L-13**, project generated traffic would not significantly affect roadway operations or service levels.

TABLE 4.L-13
EXISTING PLUS APPROVED DEVELOPMENT PLUS PROJECT ARTERIAL ROAD SEGMENT LOS

Road Segment	Existing Plus Approved		Approved Plus Project	
Pacheco Boulevard	AM Peak Hour		AM Peak Hour	
North of Arthur Road	688 / C (SB)	541 / C (NB)	698 / C (SB)	558 / C (NB)
South of Arthur Road	277 / C (SB)	278 / C (NB)	302 / C (SB)	288 / C (NB)
	PM Peak Hour		PM Peak Hour	
North of Arthur Road	841 / C (SB)	696 / C (NB)	872 / C (SB)	711 / C (NB)
South of Arthur Road	304 / C (SB)	345 / C (NB)	319 / C (SB)	386 / C (NB)

SOURCES: *Highway Capacity Manual* (Transportation Research Board, 2000).
ESA Traffic counts March 2008.

The Delay Index for Pacheco Boulevard (between Marina Vista and Morello Avenue) would continue to meet the traffic service objective of 2.0 or less under Existing Plus Approved Development Plus Project conditions.

Mitigation: None required.

Impact L.6: The project would increase traffic volumes on residential roadway segments near the project site. (Significant)

The impacts of traffic added by local approved developments and the project to the residential streets in the project area were assessed using the Traffic Infusion on Residential Environments ("TIRE") index. TIRE is a numerical representation of a resident's perception of the effect of street traffic on activities such as walking, cycling and playing, and on daily tasks such as maneuvering an auto out of a residential driveway.

The project would increase traffic on existing residential neighborhood streets that would serve as access routes to the project site. **Table 4.L-14** shows the change in the TIRE index as a result of increased daily traffic from approved development and the project. The project is estimated to generate 1,560 daily vehicle trips that would be approximately distributed between Central Avenue (65 percent) and Palms Drive (35 percent). All project trips would use Arthur Road to access the project site. Traffic from approved developments and the project would increase the TIRE index by 0.2 on Arthur Road, 0.2 on Central Avenue and 0.5 on Palms Drive. A traffic volume change that would cause an increase of 0.1 or more in the TIRE index would be noticeable to street residents.

TABLE 4.L-14
EXISTING PLUS APPROVED DEVELOPMENT PLUS PROJECT RESIDENTIAL ROAD SEGMENT LOS

	Daily Traffic	TIRE Index	Daily Traffic	TIRE Index
Residential Streets	**Existing Conditions**		**Approved + Project Conditions**	
Arthur Road	3,500	3.5	5,455	3.7
Central Avenue	1,895	3.3	3,140	3.5
Palms Drive	285	2.5	930	3.0

SOURCES: *Highway Capacity Manual* (Transportation Research Board, 2000).
ESA Traffic counts March 2008.

The residential roads (Central Avenue and Palms Drive) that would provide direct access to the project site have existing deficiencies that would require improvement prior to serving additional traffic from the project. Absent the improvements, project traffic would result in a significant impact. The following mitigation measures would not reduce the projected TIRE index values but would increase the carrying capacities of the roadways and address safety issues related to increased traffic on these roads.

Mitigation Measure L.6: The project sponsor shall be required to implement the following measures:

- Pave and improve the segment of Central Avenue that extends from approximately 100 feet east of Darcie Way (estimated 400 to 500 feet) to the project site access road. This segment would be improved to meet County design standards for a typical two-lane residential street.
- Provide required and adequate signage indicating posted speed limit and warning of nearby pedestrian and bicycle activity and vehicle driveway activity.
- Pave and improve Palms Drive from the intersection at Arthur Road to the project site access. Palms Drive would be striped as a two lane facility and may require the prohibition of on-street parking in some areas. The County would review the roadway improvement plan and make appropriate determinations prior to improvements.
- Install stop signs at the Palms Drive and Leabig Lane intersection approaches at Arthur Road. These approaches are currently uncontrolled and require traffic from these streets to yield to through traffic on Arthur Drive.

Significant after Mitigation: Less than Significant.

Impact L.7: The project would increase the demand for parking in the project area. (Less than Significant)

The *Contra Costa County Zoning Code* requires a minimum of two parking spaces per single-family dwelling unit. The project would meet the County requirements for on-site parking. On-street parking would also be provided on project developed streets.

Mitigation: None required.

Impact L.8: The project would increase ridership on public transit serving the project area. (Less than Significant)

The project would increase demand for transit service in the area. Current available public transit service in the area is limited to the CCCTA "County Connection" Route 19, which connects the area to the Concord BART station and the Amtrak Station in downtown Martinez, operating every two hours in each direction. There are no current plans to expand transit service in the project vicinity and the expected demand for transit from the project would be limited. The CCCTA will continue to monitor and evaluate the potential for service expansion in the Pacheco Boulevard corridor through its Short-Range Transit Plan efforts. The project would not be expected to result in a major increase in CCCTA bus or BART usage, and therefore the project impact would be less than significant.

Mitigation: None required.

Impact L.9: The project would increase the potential for pedestrian and bicycle safety conflicts. (Less than Significant)

The project would generate increased pedestrian and bicycle activity in the area. However, the project site is not close to established transit, employment or retail destinations and therefore pedestrian activity between the site and the existing neighborhoods would likely be low. The project would construct internal sidewalks and pedestrian crossing facilities in accordance with County street standards.

Pacheco Boulevard is a designated Class III bicycle route and is the only bicycle facility in the project vicinity. Cyclist from the project would most likely use the Central Avenue to Arthur Road route rather than Palms Drive due to the steep grade. The project would be expected to

increase bicycle activity in the area but not to a significant level. Therefore, the impact to pedestrian and bicycle safety would be less than significant.

Mitigation: None required.

Impact L.10: The project would increase on-site vehicular traffic, including potential emergency services traffic, from the project site. (Significant)

The project proposes access to the site at two locations via the extension of existing streets. The primary access road, Central Avenue, would access the site at grade from the north. The project Vesting Tentative Map (September 2006) shows Central Avenue from the site property line (Parcel 1) as a 40 foot right-of-way road which would meet County standards. Central Avenue travels along the northeast boundary of the site where it would connect with the proposed extension of Palms Drive.

Palms Drive is proposed as a secondary access to the project site. The existing road would be extended along the west and south periphery of the site as a 50 foot right-of-way facility designed to county standards. The road would continue along the eastern periphery as a 46 foot right-of-way street where it would connect to Central Avenue forming a loop roadway. The loop road would be bisected by five east-west streets (50 foot right-of-ways) all of which would provide sidewalks on both sides and on-street parking on one-side of the street.

There are no safety or operational deficiencies associated with the proposed on-site roadway design. There would be adequate emergency vehicle access and planned right-of-way lane widths would accommodate truck turning movements. Pedestrian and parking facilities would be provided in accordance with County requirements and design standards.

Emergency vehicle access to the site would occur along Central Avenue or Palms Drive. Under current unimproved conditions, Central Avenue would provide adequate emergency vehicle access to the site. Palms Drive under current unimproved conditions, would present obstacles (roadway width, uneven surface and steep grade) to access and to the maneuverability of large emergency vehicles. Mitigation Measure L.6 would result in improvements of to these roadways which would improve access for emergency vehicles.

Mitigation: See Mitigation Measure L.6.

Significant after Mitigation: Less than significant.

Cumulative (Year 2030) Impacts

Traffic Forecasts

Year 2030 traffic forecasts were developed using the CCTA model. No adjustments to the land use data were made to develop Cumulative No Project traffic forecasts. Cumulative Plus Project traffic forecasts were developed by manually adding project trips to Cumulative No Project traffic forecasts.

The roadway network assumed in the 2030 cumulative model includes some transportation system improvements in the Pacheco Boulevard Corridor south of Arthur Road, as well as planned improvements at the I-680 / SR-4 interchange south of the project site.

Cumulative Intersection Operations

Figures 4.L-7 and **4.L-8** show the Cumulative No Project and Cumulative Plus Project intersection volume forecasts, respectively, based on the model results. **Table 4.L-15** contains the intersection operations results from these analyses. All study intersections would operate acceptably during both the a.m. peak hour and the p.m. peak hour.

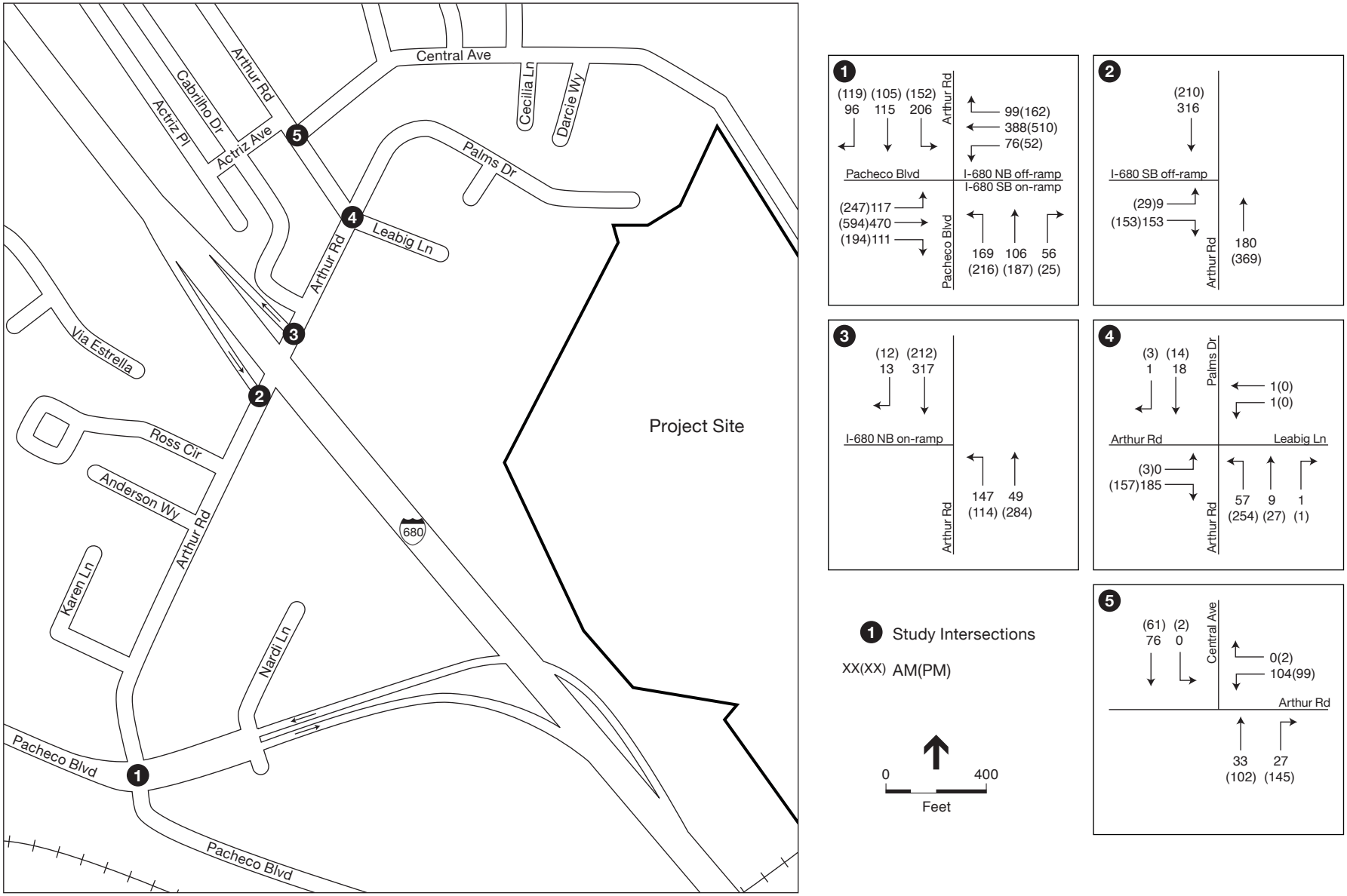
TABLE 4.L-15
CUMULATIVE AND CUMULATIVE PLUS PROJECT CONDITIONS
INTERSECTION LEVEL OF SERVICE (LOS)

	Intersection	Control[1]	Peak Hour	Cumulative No Project		Cumulative + Project	
				Delay or V/C[2,3]	LOS	Delay or V/C[2,3]	LOS
1	Arthur Road and Pacheco Boulevard	Signal	AM	0.50	A	0. 53	A
			PM	0.58	A	0.64	B
2	Arthur Road/I-680 SB Off-Ramp	SSSC	AM	12.2	B	13.7	B
			PM	11.9	B	13.9	B
3	Arthur Road/I-680 NB On -Ramp	SSSC	AM	8.5	A	8.9	A
			PM	8.0	A	8.2	A
4	Arthur Road/Palms Drive	SSSC	AM	10.3	A	11.2	B
			PM	11.6	B	14.7	B
5	Arthur Road/Central Avenue	SSSC	AM	9.8	A	10.3	B
			PM	10.7	B	11.4	B

NOTES: Results in **bold** represent significant impact.

1 Signal = Signalized intersection, SSSC = Side-street stop-controlled intersection
2 Volume-to-capacity (v/c) ratio determined for signalized intersections using the CCTA LOS methodology.
3 Average control delay per vehicle (in seconds) for the worst-case stop controlled movement or approach at side-street stop-controlled intersections according to the *Highway Capacity Manual* (Transportation Research Board, 2000).

SOURCE: ESA 2008

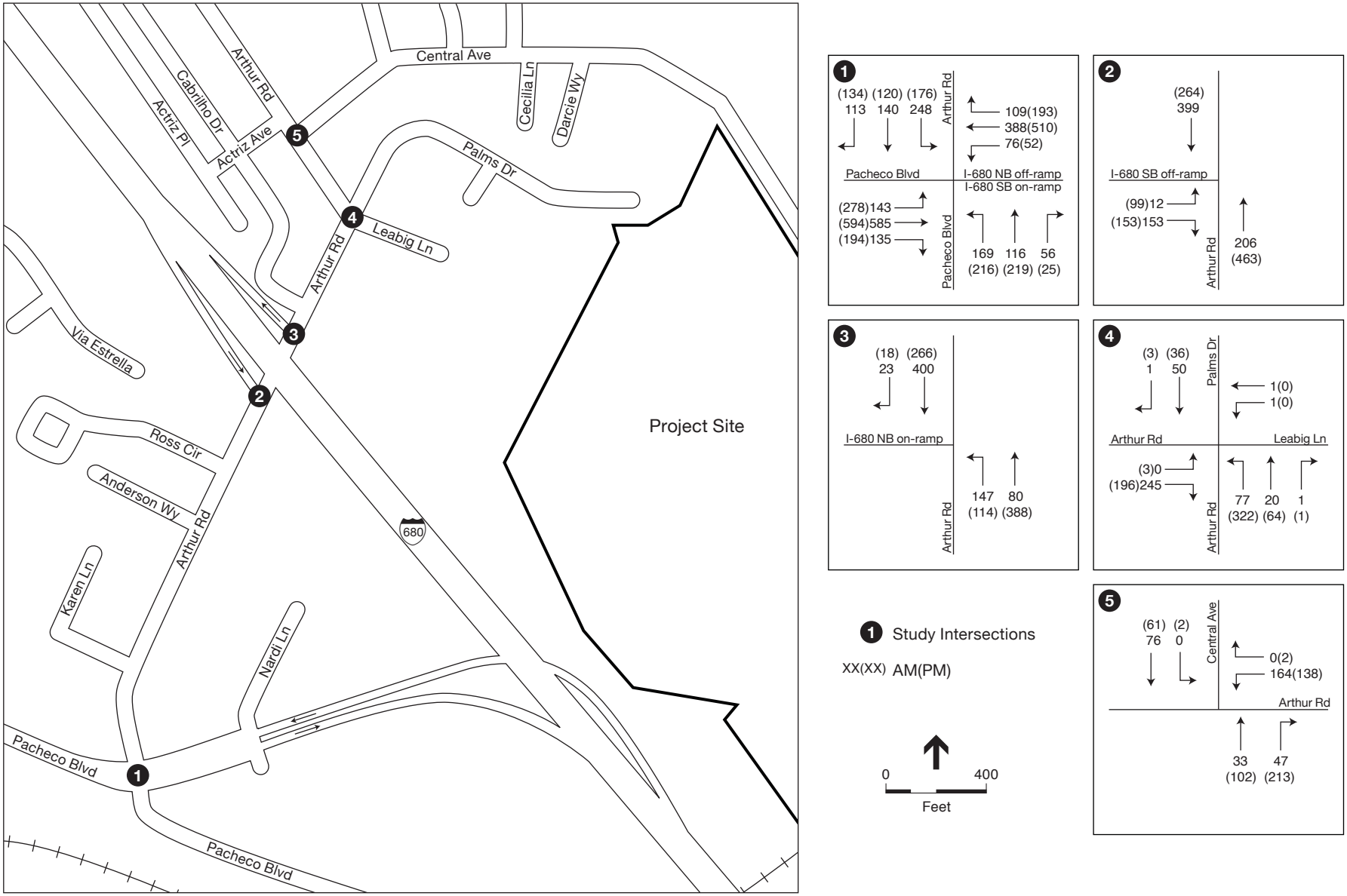


SOURCE: ESA

Bayview Residential Project Transportation Impact Analysis . 208078

Figure 4.L-7

Cumulative 2030 AM and PM No Project Peak Hour Traffic Volumes



SOURCE: ESA

Bayview Residential Project Transportation Impact Analysis . 208078

Figure 4.L-8

Cumulative 2030 + Project AM and PM Peak Hour Traffic Volumes

Roadway Conditions on "Routes of Regional Significance"

As discussed earlier, the *Central Contra Costa Action Plan* sets Traffic Service Objectives ("TSOs") for "Routes of Regional Significance" in Central County (TRANSPAC, 2000). The primary TSO that could be affected by a proposed development project is the Delay Index, which as previously described, compares the travel time during congested conditions with the free-flow travel time. For suburban arterials such as Pacheco Boulevard the TSO is that the Delay Index should not exceed 2.0, meaning that the time required to traverse the segment during congested conditions should be no more than double the time required during free-flow conditions. For the I-680 segment in the project vicinity, the Delay Index TSO is also set at 2.0. **Table 4.L-16** presents the results of the Delay Index calculations for the "Routes of Regional Significance" in the project vicinity, under both Cumulative and Cumulative Plus Project conditions.

TABLE 4.L-16
DELAY INDEX RESULTS ON "ROUTES OF REGIONAL SIGNIFICANCE"

Route Segment	Direction	Delay Index TSO	Cumulative No Project		Cumulative Plus Project	
			AM	PM	AM	PM
I-680, Marina Vista to Arthur Road	NB	2.0	1.0	2.1	1.0	2.1
	SB	2.0	2.1	1.0	2.1	1.0
I-680, South of Pacheco Boulevard Ramps	NB	2.0	1.0	2.6	1.0	2.7
	SB	2.0	2.4	1.0	2.5	1.0
Pacheco Boulevard north of Arthur Road	NB	2.0	1.0	1.0	1.0	1.0
	SB	2.0	1.0	1.0	1.0	1.0
Pacheco Boulevard south of Arthur Road	NB	2.0	1.0	1.0	1.0	1.0
	SB	2.0	1.0	1.0	1.0	1.0

NOTES: Results in **bold** represent significant impact.
TSO = Traffic Service Objective

SOURCE: ESA, 2008

Impact L.11: Traffic generated by the project would contribute to cumulative traffic at local intersections in the project vicinity in 2030. (Less than Significant)

Table 4.L-15 shows the estimated levels of service at the study intersections under Cumulative (2030) conditions with and without the project. As shown, the study intersections operate at acceptable LOS B or better during the a.m. peak hour and the p.m. peak hour. The project would not degrade any of the study intersections to unacceptable service levels by Year 2030.

Mitigation: None required.

Routes of Regional Significance

Potential cumulative (year 2030) traffic impacts with the project, and associated mitigation needs for this scenario, are identified below. Table 4.L-16 shows the results of the Delay Index calculations for the "Routes of Regional Significance" in the project vicinity. Projected a.m. peak period traffic congestion levels on the segment of southbound I-680 between Marina Vista and Arthur Road and the p.m. peak period northbound traffic on this segment are expected to violate the *Central Contra Costa Action Plan* Traffic Service Objectives ("TSOs") Delay Index under cumulative conditions both with and without the project. The addition of project traffic would not increase the Delay Index by 0.1 or more, and would therefore not contribute to a significant impact.

Impact L.12: Traffic generated by the project would contribute to cumulatively significant impacts on "Routes of Regional Significance" in the project vicinity in 2030. (Significant)

Projected a.m. peak period traffic congestion levels on the segment of southbound I-680 from the Pacheco Boulevard Ramps to SR 4 are expected to violate the *Central Contra Costa Action Plan* TSO Delay Index under cumulative conditions both with and without the project. During the p.m. peak period of traffic congestion northbound on this segment the TSO Delay Index would be violated under cumulative conditions both with and without the project. The addition of project traffic would increase the Delay Index by 0.1 (i.e., more than the threshold of significance established in the Standards of Significance) and thus would contribute to a cumulative significant impact.

> **Mitigation Measure L.12:** The project applicant shall contribute their fair share to all applicable development impact fee programs, including the Central County Regional Impact Fee, which is designed to fund improvements to regional facilities including I-680.

In the absence of additional capacity-enhancing freeway improvement projects, this cumulative impact is considered significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

References – Transportation and Traffic

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TRANSPAC, Central Contra Costa Updated Action Plans for Routes of Regional Significance, July 13, 2000.

Transportation Research Board, Highway Capacity Manual, 2000.

CHAPTER 5
Alternatives

A. Criteria for Selecting Alternatives

The California Environmental Quality Act (CEQA) requires that the EIR compare the effects of a "reasonable range of alternatives" to the effects of the project. The alternatives selected for comparison are normally those that would avoid or substantially lessen one or more significant effects of the project while still attaining most of the basic objectives of the project (CEQA *Guidelines* Section 15126.6). Specifically, Section 15126.6(b) of the CEQA *Guidelines,* states "the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." The "range of alternatives" is governed by the "rule of reason" which requires the EIR to set forth only those alternatives necessary to permit an informed and reasoned choice by the decision-making body and informed public participation [CEQA *Guidelines* Section 15126.6(f)]. CEQA generally defines "feasible" to mean an alternative that is capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, technological, and legal factors.

B. Factors in the Selection of Alternatives

The CEQA *Guidelines* recommend that an EIR should briefly describe the rationale for selecting the alternatives to be discussed, identify any alternatives that were considered by the lead agency but were rejected as infeasible, and briefly explain the reasons underlying the lead agency's determination [CEQA *Guidelines*, Section 15126.6(c)]. The following factors were considered in identifying a reasonable range of alternatives to the project:

- The extent to which the alternative would avoid or lessen one or more of the identified significant environmental effects of the project;
- The potential feasibility of the alternative, taking into account site suitability, economic viability, availability of infrastructure;
- Consistency with the *Contra Costa General Plan* and other regulatory considerations;
- The extent to which the alternative would accomplish most of the basic goals and objectives of the project;

- The requirement of the CEQA *Guidelines* to consider a "no-project" alternative and to identify an "environmentally superior" alternative in addition to the no-project alternative [CEQA *Guidelines*, Section 15126.6(e)].

The significant environmental impacts that the alternatives seek to eliminate or reduce are:

- Degradation of the visual quality and character of the project site.
- Conflicts with policies included in the *Contra Costa General Plan* and the *65/35 Land Preservation Plan.*
- Contribution to cumulatively significant impact to peak period traffic congestion levels on I-680.

The significant environmental effects of the project and each alternative are summarized in **Table 5-1** at the end of this chapter.

C. Alternatives Selected for Consideration

With consideration given to the above factors for selection, the County identified the following reasonable range of project alternatives to be addressed in this EIR:

- **Alternative 1:** No Project / Existing Conditions (No Change)
- **Alternative 2:** Reduced Grading / 50 percent Density (82 units)
- **Alternative 3:** Reduced Grading / 87 percent Density (142 units)
- **Alternative 4:** Reduced Grading / Light Industrial

D. Description and Analysis of Alternatives

Throughout this section, a description of each alternative is followed by a discussion of its impacts and how it differs from those of the project. As permitted by CEQA, the significant effects of the alternatives are discussed in less detail than are the effects of the project [CEQA *Guidelines* Section 15126.6(d)]. However, the analysis is conducted at a sufficient level of detail to provide County decision-makers adequate information to fully evaluate the alternatives and to approve any of the alternatives without further environmental review.

The impacts associated with the project and each alternative are stated as levels of significance *after* implementation of mitigation measures identified in Chapter 4.

Alternative 1: No Project / Existing Conditions

Under the No Project Alternative, the proposed project would not be constructed, and the project site would remain in its existing condition; mostly open and undeveloped land. The No Project Alternative would keep the project site under its current land use designation of Heavy Industry and zoning classification of Heavy Industrial. No subdivision of the property would occur and no additional infrastructure would be provided.

The No Project Alternative would not address the need for housing nor would it generate additional tax revenues associated with the project and the site would continue to be underutilized.

Impacts

Compared to the project, the No Project Alternative would not create the impacts described in impact analysis in Chapter 4 of this EIR. Conditions would remain as described in the setting sections of the impact analysis. The No Project Alternative would eliminate all project-related impacts.

The No Project Alternative would not meet the project objectives.

The No Project Alternative would not preclude future development of the site with use(s) consistent with the *General Plan* designation and zoning. A potential such outcome is evaluated in Alternative 4.

Alternative 2: Reduced Grading / 50 percent Density (82 units)

The Reduced Grading / 50 percent Density Alternative ("Alternative 2") is a variation of the project included in the EIR to allow consideration of a reduced impact scenario that would develop the land for less intense use. This alternative would alter the proposed grading plan such that the changes to the natural slope and overall topography of the site would be reduced and the existing peak elevation of Vine Hill would be retained. In accordance with recommendations from Darwin Myers Associates ("DMA"), the consulting geologist to the County, 2:1 gradients would be limited to slopes with a maximum height of 15 feet, thereby avoiding the need for drainage terraces on the high cut slopes. The upper portions of Vine Hill would not be graded, nor the Oak Trees removed, under this alternative.

In this scenario, the proposed number of housing units would be reduced by approximately 50 percent to yield a total of 82 new single-family units on the project site. To accommodate the reduced grading plan, the distribution of the 82 residential lots would be reconfigured within the project site. The developable area, proposed to be approximately 42 acres with the project, would also be reduced by more than 50 percent. Lot sizes would be smaller and higher density clustering of the single-family homes would occur toward the lower elevations. Approximately 81 of the proposed residential lots would be excluded from this alternative. Specifically, to incorporate DMA recommendations, residential lots excluded from Alternative 2 would include lot numbers 28, 29, 43-55 and 61-65 as shown on the Vesting Tentative Map (see Figure 3-2, Chapter 3, *Project Description*). Lots 28, 29 and 43-55 would be eliminated to simplify maintenance access to the debris bench above Palms Drive and to provide additional protection to residential units from potential slope failure. To achieve a 50 percent reduction in residential lots, this alternative would exclude 61 proposed lots in addition to the 20 specific lots mentioned above.

Impacts

Alternative 2 would have less substantial impacts than those of the project because, while it still would alter the topography of Vine Hill and introduce new residential and recreational uses to the project site, the changes would be somewhat less in intensity. When compared to the project, Alternative 2 would reduce the overall development intensity and the extent of change to the elevation, shape and form of the existing topography. Because the severity of the change would be reduced and the existing peak elevation of Vine Hill would be retained, Alternative 2 would change but would not substantially degrade the existing visual quality of the site. However, Alternative 2 would result in a significant and unavoidable land use impact by locating new residential uses near existing industrial uses and thus introducing land uses to the project site that would be incompatible with the surrounding industrial uses.

As with the project, Alternative 2 would include a zoning reclassification, a new land use designation and a revision to Policy 3-101 that would require an amendment to the *General Plan*. Alternative 2 would be fundamentally consistent with the intent of the *General Plan* policies that encourage preservation of the natural topography of existing hillsides and ridgelines and associated visual assets and policies that discourage extensive grading (i.e. policies 10-28 and 10-29, see Section 4.H, *Land Use and Planning)*. In addition, Alternative 2 would be consistent with the Hillside Protection policy included within the *65/35 Land Preservation Plan.* As such, Alternative 2 would be considered to maintain consistency with the intent and overarching goals of the *General Plan* in an overall planning context. Assuming a *General Plan* amendment is approved, a consistency finding for the project could be achieved and the plan consistency impacts under Alternative 2 would be less than significant.

Alternative 2 would have less significant transportation and traffic impacts than would the project because it would generate less traffic. In addition, a reduction of 50 percent of the residential units would reduce the cumulative traffic impact to less than significant in terms of project contribution.

Alternative 2 would result in no new impacts that would not occur with the project. However, this alternative would need to conform to most of the mitigation measures identified in this EIR to reduce impacts from implementation. All impacts of the proposed project not discussed above were found to be less than significant, with mitigation as applicable and as described in Chapter 4. Similarly, all other impacts of this alternative would also be less than significant and, under Alternative 2, would be less substantial than those of the project because this alternative would have a smaller development footprint and result in fewer residents.

The Reduced Grading / 50 percent Density Alternative would build single-family houses in the Vine Hill area and would include two points of entry, one on Palms Drive and one on Central Avenue. The project would also provide parks and open space on portions of the project site. While it would not meet the objective of building 163 residential lots, Alternative 2 would meet most of the project objectives.

Alternative 3: Reduced Grading / 87 percent Density (142 units)

The Reduced Grading / 87 percent Density Alternative ("Alternative 3") is a variation of the project that would develop the land for less intense use. It would be similar to Alternative 2 in that it would adhere to the DMA recommendations for slope gradients and, when compared with the project, would reduce the extent of topographic changes to the project site. However, it would be speculative to assume that 142 single-family residential lots could be constructed on the site while retaining the existing peak elevation of Vine Hill. Therefore, this alternative assumes changes to the peak elevation of Vine Hill, though reduced when compared with the project. Each of the lots specified for exclusion for Alternative 2 would also be excluded in this alternative (28, 29, 43-55 and 61-65) and 1 additional lot would be eliminated. The distribution of the 142 residential lots would be reconfigured within the project site and the developable area would also be reduced by more than 13 percent. Lot sizes would be reduced and higher density clustering of the single-family homes would occur toward the lower elevations. However, to accommodate the 142 residential lots, it is anticipated that Alternative 3 would require a more intensive grading plan and /or more retaining walls than would Alternative 2.

Impacts

The Reduced Grading / 87 percent Density Alternative impacts would be somewhat greater than those of Alternative 2. Considering the severity of changes to Vine Hill and the existing topography would be reduced when compared to the project but more intense compared to Alternative 2, this alternative still would degrade the existing visual quality of the site and the aesthetic impacts would be reduced but not eliminated. In addition, Alternative 3 still would locate new residential uses near existing industrial uses and thus would introduce land uses to the project site that would be incompatible with the surrounding industrial uses. As with the project, Alternative 3 would include a zoning reclassification, a new land use designation and changes to the Vine Hill/Pacheco Boulevard area Policy 3-101 that would require an amendment to the *General Plan*. Although Alternative 3 would result in significant and unavoidable impacts with respect to aesthetics, Alternative 3 would be considered to maintain consistency with the intent and overarching goals of the *General Plan* in an overall planning context. Specifically, the Reduced Grading / 87 percent Density Alternative would reduce the severity of changes to the project site topography thereby following the intent of the *General Plan* policies that encourage preservation of the natural topography of existing hillsides and ridgelines and associated visual assets and policies that discourage extensive grading (i.e. policies 10-28 and 10-29, see Section 4.H, *Land Use and Planning)*. Assuming a *General Plan* amendment is approved, a consistency finding for the project could be achieved and the plan consistency impacts under Alternative 3 would be less than significant.

Although Alternative 3 would generate more traffic than Alternative 2, it still would represent a reduction when compared to the project. A reduction in 13 percent of the residential units would likely reduce the cumulative traffic impact to less than significant in terms of project contribution.

Alternative 3 would result in no new impacts that would not occur with the project. However, this alternative would need to conform to most of the mitigation measures identified in this EIR to reduce impacts from implementation. All impacts of the proposed project not discussed above were found to be less than significant, with mitigation as applicable and as described in Chapter 4. Similarly, all other impacts of this alternative would also be less than significant and, under Alternative 3, would be less substantial than those of the project because this alternative would have a smaller development footprint and result in fewer residents.

Similar to Alternative 2, the Reduced Grading / 87 percent Density Alternative would meet most of the project objectives, although it would develop fewer new residential units than would the project.

Alternative 4: Reduced Grading / Light Industrial

The Reduced Grading / Light Industrial Alternative ("Alternative 4") is a variation of the project included in the EIR to allow consideration of an alternative use scenario that would be largely consistent with the *General Plan*. This alternative would be similar to Alternatives 2 and 3 in that it would adhere to the DMA recommendations for slope gradients and, when compared to the project, would reduce the extent of topographic changes to the project site. Changes to the natural slope and overall topography of the site would be reduced and 2:1 gradients would be limited to slopes with a maximum height of 15 feet. The upper portions of Vine Hill would not be graded and the existing peak elevation of Vine Hill and the Oak Trees present on the site would be retained.

In this scenario, light industrial uses, rather than residential and recreational uses, would be introduced to the project site. For purposes of analysis, it is assumed that this alternative would develop relatively low intensity uses consistent with those in the vicinity such as self storage, recreational vehicle storage or the like, and that Central Avenue would serve as the only access point to the site. To accommodate the reduced grading plan, the developable area, proposed to be approximately 42 acres with the project, would also be reduced by more than 50 percent. To the extent feasible, built elements would be clustered in the lower elevations such that the overall development would generally conform to the natural contours of Vine Hill.

Impacts

Alternative 4 would have lesser impacts than would the project, as it would alter the topography of Vine Hill less dramatically and introduce new uses to the project site that would be of lesser intensity than the project's proposed residences. When compared to the project, Alternative 4 would reduce the overall development intensity and the extent of change to the elevation, shape and form of the existing topography. Considering the intensity of use, specifically as it relates to daytime population and vehicle trip generation, Alternative 4 would represent a reduced impact scenario.

When compared to the project, the severity of the topographic changes would be reduced, and Alternative 4 would alter but not substantially degrade the existing visual quality of the site. Therefore, this alternative would not result in any significant adverse aesthetics impacts.

Alternative 4 would not locate new residential uses near existing industrial uses and thus would not introduce land uses to the project site that would be incompatible with the surrounding industrial uses.

Alternative 4 would not include or require a zoning reclassification or a new land use designation as light industrial uses are permitted within areas zoned for heavy industry. Alternative 4 would be generally consistent with policies included in the *65/35 Land Preservation Plan* and the *General Plan.* Light industrial uses would serve to buffer residential neighborhoods from industrial/land fill-related uses to the west of the project site, as stated in *General Plan* policy 3-102, and the reduced grading would protect Vine Hill Ridge, as stated in *General Plan* policy 3-101. Therefore, the plan consistency impacts under Alternative 4 would be less than significant.

Transportation and traffic impacts under Alternative 4 would decrease as less intense light industrial uses, such as self storage, recreational vehicle storage and the like, would generate less traffic than residential uses. Under Alternative 4, the developable area would be reduced by 50 percent to about 21 acres. When compared to the project, Alternative 4 would generate approximately 48 percent of the daily trips, approximately 57 percent of the a.m. peak hour trips and approximately 51 percent of the p.m. peak hour trips. Implementation of Alternative 4 would reduce the cumulative traffic impact to less than significant in terms of project contribution.

Alternative 4 would result in no new impacts that would not occur with the project. However, this alternative would need to conform to most of the mitigation measures identified in this EIR to reduce impacts from implementation. All impacts of the proposed project not discussed above were found to be less than significant, with mitigation as applicable and as described in Chapter 4. Similarly, all other impacts of this alternative would also be less than significant.

The Reduced Grading / Light Industrial Alternative would not meet the fundamental project objectives of developing residential uses at the project site.

E. Environmentally Superior Alternative

The No Project Alternative would be environmentally superior to the proposed project on the basis of minimization or avoidance of physical environmental impacts. However, the No Project Alternative does not meet any of the project objectives.

CEQA requires that that a second alternative be identified when the “No Project” alternative emerges as the Environmentally Superior Alternative (CEQA *Guidelines*, Section 15126.6(e)). Therefore, Alternative 4, Reduced Grading / Light Industrial would be considered the environmentally superior alternative since it would reduce the project related significant environmental impacts to aesthetics, land use and traffic. It would not meet the fundamental project objectives of developing residential uses at the project site. This alternative may not be financially viable with an income return that recompenses the time, financial investment and the risk associated with the project.

F. Alternatives Considered but Rejected for Detailed Analysis

In addition to the alternatives listed and analyzed above, a Heavy Industrial Alternative was considered but rejected for detailed analysis. This Alternative is an alternative use scenario which considers development of the site with Heavy Industrial uses consistent with the existing Heavy Industrial zoning and Heavy Industry land use designation. Development of the site with Heavy Industrial uses could require provision of roadway access to heavy trucks thereby involving extensive grading to allow for roadways with substantially less slope than those proposed in the project. A Heavy Industrial Alternative would likely include extensive modifications to the site topography and, as such, would be considered incapable of avoiding or substantially lessening the significant effects of the project. Also, this Alternative could include air quality effects (emissions of criteria pollutants, TACs and odors), noise effects, traffic effects (trucks and worker vehicles) and hazardous materials effects; all potentially greater than project effects. Further, this Alternative would not meet the fundamental project objectives of developing residential uses at the project site. For these reasons, this alternative was considered but rejected for detailed analysis.

TABLE 5-1
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.	**Project**	**1 No Project**	**2 Reduced Grading / 50 percent Density**	**3 Reduced Grading / 87 percent Density**	**4 Reduced Grading / Light Industrial**
A. Aesthetics					
A.1: Construction of the project would create temporary aesthetic nuisances associated with project construction and grading activities.	LSM	N	LSM⇩	LSM⇩	LSM⇩
A.2: The project would alter the existing visual character of the project site, and would substantially degrade the existing visual quality of the site and its surroundings.	SU	N	LS	SU⇩	LS
A.3: The project would not have a substantial adverse effect on a scenic vista or adversely affect scenic resources along any designated scenic highway.	LS	N	LS⇩	LS⇩	LS⇩
A.4: Development of the project would introduce new sources of light and glare onto the project site and increase ambient light in the vicinity.	LS	N	LS⇩	LS⇩	LS⇩
A.5: The project, when combined with other foreseeable development in the vicinity, would result in a cumulative aesthetics impact related to scenic vistas and resources, or visual character and visual quality.	LS	N	LS⇩	LS⇩	LS⇩
B. Air Quality					
B.1: Activities associated with site preparation and construction throughout development of the project would generate suspended and inhalable particulate matter.	LSM	N	LSM⇩	LSM⇩	LSM⇩
B.2: Activities associated with site preparation and construction throughout development of the project would generate emissions of criteria pollutants, including equipment exhaust emissions.	LS	N	LS⇩	LS⇩	LS⇩
B.3: The project would result in increased emissions of criteria pollutants and their precursors from vehicular traffic to and from the project site; however, the emission increases from the project would not exceed Bay Area Air Quality Management District significance criteria.	LS	N	LS⇩	LS⇩	LS LS⇩
B.4: The project would result in exposure of persons to substantial levels of Toxic Air Contaminants (“TACs”) such that the probability of contracting cancer for the Maximally Exposed Individual exceeds 10 in one million.	LSM	N	LSM	LSM	LSM
B.5: The project would not conflict with implementation of state goals for reducing greenhouse gas emissions and thereby would not have an adverse effect on the State’s ability to meet its goals under AB 32 with regard to Global Climate Change.	LS	N	LS⇩	LS⇩	LS⇩
B.6: The project would locate sensitive receptors near existing sources of objectionable odors.	LS	N	LS ⇩	LS ⇩	LS⇩
B.7: The project is fundamentally consistent with the growth assumptions of the Bay Area *Clean Air Plan*.	LS	N	LS⇩	LS⇩	LS⇩

Legend
LS Less than significant or negligible impact; no mitigation required
LSM Less than significant adverse impact, after mitigation
SU Significant and unavoidable adverse impact, after mitigation
N No impact
B Beneficial
⇧⇩ Impact is more severe or less severe than project impact, after mitigation

TABLE 5-1 (Continued)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.	**Project**	**1 No Project**	**2 Reduced Grading / 50 percent Density**	**3 Reduced Grading / 87 percent Density**	**4 Reduced Grading / Light Industrial**
C. Biological Resources					
C.1: Implementation of the project would result in the loss of degraded California annual (non-native) grassland within the project boundaries, which is used by special status raptors as foraging habitat.	LS	N	LS⇩	LS⇩	LS⇩
C.2: Project activities would result in temporary disturbance to jurisdictional wetlands.	LSM	N	LSM⇩	LSM⇩	LSM⇩
C.3: Project activities would degrade adjacent jurisdictional wetlands.	LSM	N	LSM⇩	LSM⇩	LSM⇩
C.4: Project activities would have a deleterious effect on special status bird species.	LSM	N	LSM⇩	LSM⇩	LSM⇩
C.5: The Project would result in the loss of 34 native oak trees, each with a trunk diameter of 6.5 inches or larger, which are "Protected Trees" as defined in the *Contra Costa County Zoning Code*, and which constitute an inholding of Oak Woodland.	LSM	N	N	LSM	N
C.6: Project activities in the vicinity of the pond would affect California red-legged frogs or western pond turtle.	LSM	N	LSM⇩	LSM⇩	LSM⇩
C.7. The project would interfere with the movement of native resident or migratory wildlife species or with migratory wildlife corridors.	LS	N	LS⇩	LS⇩	LS⇩
C.8: The project, in conjunction with past, present and reasonably foreseeable projects, would not cumulatively affect biological resources.	LS	N	LS⇩	LS⇩	LS⇩
D. Cultural Resources					
D.1: The site preparation and construction of the project would involve extensive subsurface disturbance that could potentially encounter and damage previously undiscovered buried historic or archaeological resources or human remains.	LSM	N	LSM⇩	LSM⇩	LSM⇩
D.2: The project, in conjunction with past, present and reasonably foreseeable development, could contribute to cumulative impacts on cultural resources.	LS	N	LS⇩	LS⇩	LS⇩
E. Geology, Soils and Seismicity					
E.1: Development at the project site could subject people and property to slope instability hazards, including landslides, debris flows and rockfalls caused by seismic or nonseismic mechanisms.	LSM	N	LSM⇩	LSM⇩	LSM⇩
E-2: Project development at the proposed site would be subjected to significant ground shaking from a seismic event on one of the regional active faults causing personal injury and significant damage to structures.	LSM	N	LSM⇩	LSM⇩	LSM⇩

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TABLE 5-1 (Continued)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.	**Project**	**1 No Project**	**2 Reduced Grading / 50 percent Density**	**3 Reduced Grading / 87 percent Density**	**4 Reduced Grading / Light Industrial**
E. Geology, Soils and Seismicity (cont.)					
E.3: With proposed fill placements reaching up to 59 feet thick, the project site would be susceptible to settlement either from static forces or earthquake induced forces causing structural damage or personal injury.	LSM	N	LSM⇩	LSM⇩	LSM⇩
E.4: Construction activities at the project area would loosen and expose substantial volumes of surface soils. If left exposed over long periods, soils would erode by wind or rain resulting in loss of topsoil. In addition, filled soils on slopes that are not adequately managed would be susceptible to erosion.	LSM	N	LSM⇩	LSM⇩	LSM⇩
E-5: The project, in conjunction with cumulative development, would not result in significant cumulative impacts with respect to geology, soils or seismicity.	LS	N	LS⇩	LS⇩	LS⇩
F. Hazards and Hazardous Materials					
F.1: Hazardous materials used on-site during construction activities (i.e., solvents) could be released to the environment through improper handling or storage.	LSM	N	LSM⇩	LSM⇩	LSM⇩
F.2: Project operations would generate general household and maintenance hazardous waste.	LS	N	LS⇩	LS⇩	LS
F.3: The crude oil pipelines that transect the project site would represent a hazard to the public or environment in the event of accidental upset.	LS	N	LS⇩	LS⇩	LS⇩
F.4: The proposed residences would be located relatively close to the Burlington Northern Santa Fe Railroad tracks which are used to transport hazardous materials among other types of freight. In the event of accidental upset through derailment or other means, release of hazardous materials could represent a hazard to the public or environment through inhalation.	LS	N	LS	LS	LS
F5: Operation of the project in combination with other developmental projects in the site vicinity would not contribute to cumulative hazards and hazardous materials impacts in the project area.	LS	N	LS⇩	LS⇩	LS⇩
G. Hydrology and Water Quality					
G.1: Project construction would cause erosion and increase stormwater runoff resulting in an adverse water quality impact.	LS	N	LS⇩	LS⇩	LS⇩
G.2: Excavation during project construction could intercept shallow groundwater, which could be contaminated. The groundwater if released into the waterways, would affect the surface water quality.	LS	N	LS⇩	LS	LS⇩

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TABLE 5-1 (Continued)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.	**Project**	**1 No Project**	**2 Reduced Grading / 50 percent Density**	**3 Reduced Grading / 87 percent Density**	**4 Reduced Grading / Light Industrial**
G. Hydrology and Water Quality (cont.)					
G.3: Development of the project would result in a substantial change to drainage patterns and increase in impervious area, thereby increasing stormwater runoff volumes and the likelihood of erosion and flooding downstream.	LS	N	LS⇩	LS⇩	LS⇩
G.4: The increased construction activity and new development resulting from the project, in conjunction with other past, present and reasonably foreseeable projects in the area would not result in cumulative impacts with respect to hydrology and water quality.	LS	N	LS⇩	LS⇩	LS⇩
H. Land Use					
H-1: The project would result in new land uses on previously undeveloped land that would be incompatible with some surrounding land uses.	SU	N	SU⇩	SU⇩	LS
H.2: Implementation of the project, including the proposed amendment to the *General Plan* and zoning reclassification, would result in changes in land uses within the Vine Hill/Pacheco Boulevard Area and would conflict with adopted applicable land use plans and policies.	SU	N	LS	LS	LS
H-3: The proposed project, together with other developments in the immediate vicinity, would not physically divide an established community, and would not result in cumulative impacts with respect to applicable land use regulations, or existing uses.	LS	N	LS⇩	LS⇩	LS⇩
I. Noise					
I.1: Construction activities with the project would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project and in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	LSM	N	LSM⇩	LSM⇩	LSM⇩
I.2: Increased traffic from the operation of the project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.	LS	N	LS⇩	LS⇩	LS⇩
I.3: The project would introduce sensitive receptors to a noise environment with noise levels in excess of standards considered "normally acceptable" by the *Contra Costa County General Plan* for such uses.	LSM	N	LSM⇩	LSM⇩	LS⇩
I-4: The project would not expose people residing or working in the project area to aircraft noise levels in excess of standards in the Contra Costa County Airport Land Use Plan.	LS	N	LS⇩	LS⇩	LS⇩
I-5: The project, together with anticipated future development in the area in general, would not result in a significant cumulative increase in noise levels in the area.	LS	N	LS⇩	LS⇩	LS⇩

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TABLE 5-1 (Continued)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.	**Project**	**1 No Project**	**2 Reduced Grading / 50 percent Density**	**3 Reduced Grading / 87 percent Density**	**4 Reduced Grading / Light Industrial**
J. Population and Housing					
J.1: The project would result in an increase in the residential population within the area.	LS	N	LS⇩	LS⇩	N
J.2: The project would not result in a permanent increase in employment within the area.	LS	N	LS⇩	LS⇩	LS⇩
J.3: The project would increase the on-site population, but would not result in a cumulatively considerable contribution to population growth in area.	LS	N	LS⇩	LS⇩	N
K. Public Services and Utilities					
K-1: The project would increase the demand for fire protection and emergency medical services, which would not result in the need for the provision of new or physically altered facilities, the construction of which would cause significant environmental impacts.	LSM	N	LSM⇩	LSM⇩	LSM⇩
K-2: The project would increase the demand for police protection services, but would not result in the need for the provision of new or physically altered facilities.	LS	N	LS	LS	LS
K-3: The project would increase the demand for public school services, but would not result in the need for the provision of new or physically altered facilities.	LS	N	LS	LS	N
K-4: The project would increase the demand for child care services, but would not result in the need for the provision of new or physically altered facilities.	LS	N	LS	LS	N
K-5: The project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, nor include recreational facilities or require the construction or expansion of recreational facilities.	LS	N	LS	LS	N
K-6: The domestic and emergency water demand generated by the project would not exceed water supplies available from existing entitlements and resources.	LS	N	LS⇩	LS⇩	LS⇩
K-7: The project would require or result in construction of new water facilities or expansion of existing facilities, the construction of which would cause significant environmental effects	LSM	N	LSM⇩	LSM⇩	LSM⇩
K-8: The project would generate demand for wastewater utility service, which would require annexation of the project site into a Sanitary District. The project would result in expansion of existing wastewater collection system, the construction of which would not cause significant environmental effects.	LSM	N	LSM	LSM	LSM
K-9: The project would generate solid waste but would not exceed the permitted capacity of the landfill serving the project site.	LS	N	LS⇩	LS⇩	LS
K-10: The project would increase demand for electricity and natural gas services at the project site.	LS	N	LS⇩	LS⇩	LS

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TABLE 5-1 (Continued)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.	**Project**	**1 No Project**	**2 Reduced Grading / 50 percent Density**	**3 Reduced Grading / 87 percent Density**	**4 Reduced Grading / Light Industrial**
K. Public Services and Utilities (cont.)					
K.11: Development of the project, in conjunction with other past, present and reasonably foreseeable development in the Vine Hill/Pacheco Boulevard Area, would not result in cumulative impacts on public services or utilities.	LS	N	LS	LS	LS
L. Transportation					
L1: Project construction would result in temporary increases in truck traffic and construction worker traffic**.**	LSM	N	LSM⇩	LSM⇩	LSM⇩
L.2: Project-generated increases in heavy truck traffic on area roadways could result in substantial damage or wear of public roadways.	LSM	N	LSM⇩	LSM⇩	LSM⇩
L.3: The project would increase traffic volumes at the nearby intersections.	LS	N	LS⇩	LS⇩	LS⇩
L.4: The project would increase traffic volumes on I-680.	LS	N	LS⇩	LS⇩	LS⇩
L.5: The project would increase traffic volumes on Pacheco Boulevard.	LS	N	LS⇩	LS⇩	LS⇩
L.6: The project would increase traffic volumes on residential roadway segments near the project site.	LSM	N	LSM⇩	LSM⇩	LSM⇩
L.7: The project would increase the demand for parking in the project area.	LS	N	LS⇩	LS⇩	LS⇩
L.8: The project would increase ridership on public transit serving the project area.	LS	N	LS⇩	LS⇩	LS⇩
L.9: The project would increase the potential for pedestrian and bicycle safety conflicts.	LS	N	LS⇩	LS⇩	LS⇩
L.10: The project would increase on-site vehicular traffic, including potential emergency services traffic, from the project site.	LSM	N	LSM⇩	LSM⇩	LSM
L.11: Traffic generated by the project would contribute to cumulative traffic at local intersections in the project vicinity in 2030.	LS	N	LS	LS	LS
L.12: Traffic generated by the project would contribute to cumulatively significant impacts on “Routes of Regional Significance” in the project vicinity in 2030.	SU	N	LSM	LSM	LSM

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CHAPTER 6
Other Statutory Sections

A. Significant Unavoidable Environmental Impacts

CEQA *Guidelines* Section 15126.2(b) requires a discussion of any significant impacts that "cannot be avoided if the proposed project is implemented." When a project is determined to have significant impacts after implementation of mitigation, the decision makers must then evaluate whether the benefits of the project outweigh the significant impacts to the environment. If the project is approved, a Statement of Overriding Considerations is required in accordance with CEQA *Guidelines* Section 15093. Based upon the analysis in Chapter 4, the following impacts would be significant and unavoidable, even with implementation of project mitigation measures (see Chapter 4 for more details):

Aesthetics

Implementation of the project would have a significant and unavoidable impact on the existing visual quality of the project site (Impact A.2).

Land Use and Planning

Implementation of the project would result in new land uses on previously undeveloped land that would be incompatible with surrounding land uses (Impact H.1).

Implementation of the project, including the proposed amendments to the *General Plan* and zoning reclassification, would conflict with adopted and applicable policies of the *Contra Costa County General Plan* as well as Measure C-1990 (Ordinance 82-1) (Impact H.2).

Transportation and Traffic

Traffic generated by the project would contribute to cumulatively significant impacts on "Routes of Regional Significance" in the project vicinity in 2030 (Impact L.12).

B. Significant Irreversible Environmental Changes

CEQA *Guidelines* Section 15126.2(c) requires a discussion of significant irreversible environmental changes that would result from the project. Project construction and operation would result in an irretrievable loss of, and irreversible commitment of, natural resources, including undeveloped open land. Project construction and operation would require the use of fossil fuels and other natural materials, such as wood and metals. Project construction and operation would also emit pollution into the air both from construction machines and vehicles

during the construction phase and from vehicles traveling to and from the project site during the operation phase. These topics and others are discussed in depth in Chapter 4.

C. Growth Inducement

Pursuant to Section 15126.2(d) of the CEQA *Guidelines*, an EIR must address whether a project will directly or indirectly foster growth. Section 15126.2(d) calls for the EIR to:

> *"Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant, might, for example, allow for more construction in service areas). Increases in population may further tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment."*

This analysis evaluates whether the project would directly or indirectly, induce economic, population or housing growth in the surrounding environment.

The project would include the construction of 163 single-family residences. Thus, as discussed in Section 4.J, *Population and Housing*, the estimated population increase for the County would be 403 residents.[1] This is a direct form of growth inducement. However, this population increase would be consistent with ABAG population estimates and growth anticipated by the *Contra Costa County General Plan* Housing Element. Therefore, development of the project would not result in significant population growth.

The project would most likely provide housing for individuals already living in Contra Costa County and would be meeting an existing housing demand that is already accounted for by the region. The project would not generate new permanent employment opportunities. In addition, while construction of the project would generate a temporary need for construction employment (approximately one to three years), it is likely that construction workers would be those already living in Contra Costa County or the surrounding region, and therefore the temporary increase in construction-related employment would not generate demand for new housing. Overall, any increase in employment would be minimal; the project would not induce substantial direct or indirect population growth.

Although the project would extend infrastructure and roadways within the project site, these improvements would consist of local connections to serve the project site. Thus, the project would not remove obstacles to population growth beyond the project site, particularly given that such growth is precluded in much of the area beyond the site by other current land uses, such as

[1] Based on the 2005 average household size of 2.47 persons/dwelling unit for the City of Martinez and its SOI (ABAG *Projections 2007*).

the I-680 freeway, the former Acme Landfill, and the Central Contra Costa County Sanitary District treatment plant. As such, the project would not indirectly induce substantial population growth, as the infrastructure would not facilitate development at other locations.

D. Cumulative Analysis

The California Environmental Quality Act (CEQA) defines cumulative impacts as two or more individual impacts which, when considered together, are substantial or which compound or increase other environmental impacts. The cumulative analysis is intended to describe the "incremental impact of the project when added to other, closely related past, present, or reasonably foreseeable future projects" that can result from "individually minor but collectively significant projects taking place over a period of time (CEQA *Guidelines* Section 15355). The analysis of cumulative impacts is a two-phase process that first involves the determination of whether the project, together with reasonably foreseeable projects, would result in a significant impact. If there would be a significant cumulative impact of all such projects, the EIR must determine whether the project's incremental effect is cumulatively considerable, in which case, the project is deemed to have a significant cumulative effect.

The cumulative effects of the project are described in individual sections of this environmental document. In general, cumulative analyses for this EIR were based on the identified past, present and reasonably foreseeable projects. With the exception of the Kinder Morgan and Chevron pipeline projects, constructed on the northeast side of the project site within the last six years, no significant projects have been constructed in the project vicinity. County staff identified approved, but not yet completed projects within the vicinity of the project site for consideration in the cumulative scenario. They include Bella Rosa (128-lot subdivision on Pacheco Boulevard), Field Courtyard (89-lot subdivision on Pacheco Boulevard), Blum View Estates (28-lot subdivision on Blum Road), Seal Island (24-lot subdivision on Central Avenue), 4762 Pacheco Boulevard (20-lot subdivision), Palms Ten (10-lot subdivision on Palms Drive), Hillside Estates (9-lot subdivision on 150 Hillside Lane) and Weatherly Place (8-lot subdivision on 4776 Pacheco Boulevard). Future new development within the area would be subject to development guidance contained within the *General Plan.* The location of these projects is illustrated in Figure 4.L-4 of Section 4.L, *Transportation and Traffic*.

For the Transportation and Traffic analysis, cumulative development was incorporated into the year 2030 CCTA Model to assess traffic impacts of the project, consistent with accepted practice and direction from the CCTA. A significant cumulative traffic impact was identified for the year 2030. Specifically, traffic generated by the project would contribute to cumulatively significant impacts on the "Routes of Regional Significance" in the project vicinity by 2030. While some transportation system improvements in the Pacheco Boulevard Corridor south of Arthur Road were assumed in the analysis, as well as planned improvements at the I-680 / SR-4 interchange south of the project site, this impact would remain significant.

No other cumulative impacts were determined to be significant.

E. Less than Significant Impacts

CEQA *Guidelines* Section 15126.2(a) requires a discussion of the significant environmental effects of the project. In addition to the environmental effects discussed in Chapter 4, impacts related to agricultural and mineral resources were found to be less than significant:

Mineral Resources

The CGS (formerly the California Division of Mines and Geology) has classified lands within the San Francisco Bay Region into Mineral Resource Zones ("MRZs"). The classification of MRZs is based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act (SMARA) of 1975 (Stinson et al., 1982).[2] The project site is mapped by the CGS as containing both an MRZ-1 zone, an area where no significant mineral deposits are present, and an MRZ-4 zone, an area where available information is inadequate for assignment to any other MRZ zone (Stinson et al., 1982). In general the MRZ-1 zone is limited to the low-lying areas covered by colluvium and Bay Mud while the MRZ-4 zone covers the majority of Vine Hill. MRZ-2 zones, which are not mapped anywhere near the proposed project site, are areas where significant mineral deposits are present. Therefore, there would be no significant impacts related to mineral resources and they are not discussed further in this document.

Agricultural Resources

The project property is zoned for heavy industrial uses and is not covered by a Williamson Act contract. The project site does not contain farmland and there are no aspects of the project that would affect any identified agricultural land offsite. The site is not identified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance on the Contra Costa County Important Farmland Map (Contra Costa County, 2006); it is designated as Urban and Built-Up Land (DLRP, 2004).[3,4] Thus, implementation of the project would not interact with or conflict with existing agricultural zoning or a Williamson Act contract, would not result in conversion of farmland, on-site or off-site, to a non-agricultural use and would have no impact on important farmland.

2 Stinson, et al, California Department of Mines and Geology (CDMG), 1982. Aggregate Materials in the San Francisco – Monterey Bay Area Port Chicago Quadrangle, Special Report 146, Part II.

3 Contra Costa County, 2006 Agricultural Preserves Map, Contra Costa County, ftp://ftp.consrv.ca.gov/pub/dlrp/WA/Map%20and%20PDF/Contra%20Costa/2006_Ag_Preserve_Map.pdf , 2006.

4 California Department of Conservation, Division of Land Resource Protection (DLRP), Important Farmland in California, http://www.consrv.ca.gov/DLRP/fmmp/images/fmmp2004_11_17.pdf, 2004.

CHAPTER 7
Report Preparers

EIR Authors

Contra Costa County Community Development Department
651 Pine Street, 4th Floor – North Wing
Martinez, CA 94553

Aruna Bhat, Deputy Director, Current Planning
Patrick Roche, Division Manager, Advance Planning
Ryan Hernandez, Senior Planner, Current Planning

EIR Consultants

Environmental Science Associates (Prime Consultant)
225 Bush Street, Suite 1700
San Francisco, California 94104-4207

President: Gary W. Oates
Project Director: Karl F. Heisler
Project Manager: Elizabeth Kanner
Participants: Lisa Bautista
Rachel Brush
Shana DeClercq
Asavari Devadiga
Dylan Duverge
Ron Foster
Jyothi Iyer
Paul Miller
Anthony Padilla
Ricardo Ramirez
Tom Roberts, CWB
Josh Schnabel
Eric Schniewind
Ron Teitel
Sabine Tucker
Linda Uehara
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Yanwu Zhou

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5283 Broadway
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Allen Pastron, Ph.D., Principal

Douglas Herring & Associates (Cultural Resources; Public Services & Utilities)
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El Cerrito, CA 94530
Doug Herring, AICP

Vallier Design Associates (Visual Simulations)
210 Washington Avenue, Suite G
Point Richmond, CA 94801
Matt Brockway, Principal

Wood Biological Consulting (Biology)
65 Alta Hill Way
Walnut Creek, CA 94595
Michael Wood

Project Sponsor

Discovery Builders, Inc.
4061 Port Chicago Highway, Suite H
Concord, CA 94520

Louis Parsons, Vice President of Forward Planning

APPENDIX A

Notice of Preparation

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Community
Development
Department

County Administration Building
651 Pine Street
Fourth Floor, North Wing
Martinez, California 94553-1229

Phone:

March 19, 2008

Contra
Costa
County

Dennis M. Barry, AICP
Community Development Director

FILED
MAR 19 2008
S.L. WEIR, COUNTY CLERK
CONTRA COSTA COUNTY
BY _____ DEPUTY

NOTICE OF PREPARATION
NOTICE OF SCOPING SESSION

FOR AN ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED BAYVIEW ESTATES RESIDENTIAL PROJECT
(County Files: GP04-0007, RZ04-3148, DP04-3080, SD04-8809)

TO: ALL INTERESTED AGENCIES, ORGANIZATIONS AND INDIVIDUALS

The Contra Costa County Community Development Department has received applications from Vinehill Investment Inc. requesting approval of a General Plan Amendment, Rezoning, Major Subdivision and Final Development Plan for the "Bayview Estates" residential project. The Department has determined that this project requires preparation of an environmental impact report.

LOCATION OF PROJECT.

The project site is located in the unincorporated community of Vinehill in central Contra Costa County at 850 Central Avenue. The site is bordered by Interstate 680 to the west, by Pacheco Creek to the east, the Atchison Topeka and Santa Fe Railroad to the south, and residential development and Acme Fill to the north.

The vacant 78 acre site consists of one parcel (Assessor Parcel No. 380-030-046). The western half of the property contains Vine hill that has a maximum elevation of 283 feet above mean sea level. The eastern half of the project site includes flat land from 4 feet above mean sea level and wetland areas totaling approximately 10 acres.

PROPOSED PROJECT.

This proposed project consists of development of 163 single-family residential lots on approximately 42 acres. Several different lot configurations have been proposed ranging in size from 6,000 to 15,788 square feet. Parcel "A" is 9.75 acres and is proposed near the top of Vinehill. Parcel "B" is 14.92 acres and includes the marsh and overflow open space area. Additionally, there is a park and bio-retention area of 11.59 acres located on the eastern most side of the property.

The proposed project may have a significant impact on the following resources: Aesthetics, Air Quality, Biology, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use / Planning, Noise, Public Services, Transportation / Traffic, Utilities / Service Systems. The EIR will further analyze the impact of the proposed project on these resources.

PROJECT ENTITLEMENTS AND APPROVALS:
The Applicant is applying to the County for the following land use entitlements and approvals.

- *General Plan Amendment*. A General Plan Amendment will allow the Project site, which is currently designated Heavy Industrial (HI), to be changed to Single Family Residential, High Density (SH).
- *Rezoning*. A request for approval to rezone 78 acres from Heavy Industrial, (H-I), to Planned Unit District, (P-1).
- *Development Plan*. A request for approval of a final development plan to construct 163 single-family residential homes with associated street and landscape improvements.
- *Subdivision*. A request for vesting tentative map approval to subdivide 78 acres into 163 single-family lots, Parcels "A" and "B" and Park area.

PUBLIC COMMENTS.

The Contra Costa Community Development Department will be the Lead Agency for the preparation of the Environment Impact Report for this project. All responsible agencies, interested agencies and individuals are invited to submit comments which address environmental concerns resulting from the implementation of the proposed project.

Responses to this Notice of Preparation must be received at the Contra Costa County Community Development Department, 651 Pine Street, 4th Floor – North Wing, Martinez – California 94553, and Attention: Ryan Hernandez, by Friday April 18, 2008 at 5:00 p.m.

SCOPING SESSION.

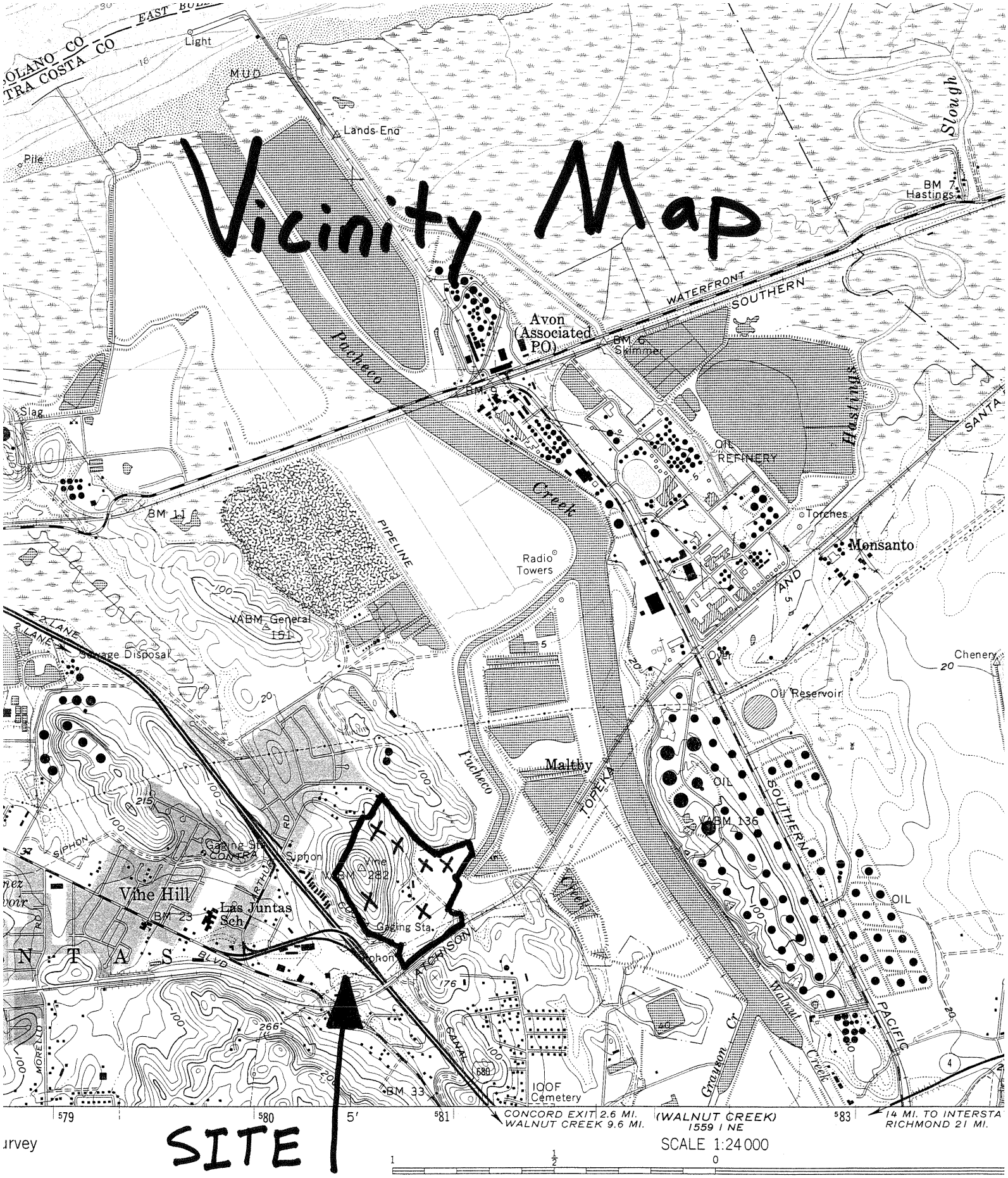
A Scoping Session will be held on Monday, April 7, 2008 at 1:30 p.m., in Room 107 of the McBrien Administration Building, 651 Pine Street, Martinez, California. Interested agencies and individuals may submit oral and written comments which pertain to environmental concerns resulting from implementation of the proposed project.

SUPPORTING DOCUMENTS.

The General Plan Amendment, Rezoning, Development Plan and Subdivision Applications and supporting documentation are available for review at the Contra Costa Community Development Department. If you wish to obtain a copy of any supporting document related to this project, you may contact Ryan Hernandez, of the Community Development Department at (925) 335-1206.

Signature: RYAN HERNANDEZ

Title: Senior Planner,
Contra Costa County
Community Development Department
Current Planning Division
651 Pine Street, 4th Floor – North Wing
Martinez, CA 94553-0095
rahern@cd.cccounty.us


Vicinity Map
SITE
SOLANO CO
CONTRA COSTA CO
EAST BOUND
Light
MUD
Lands End
Pile
Slough
BM 7
Hastings
WATERFRONT
SOUTHERN
Avon
(Associated
P.O.)
BM 6
Skinner
Pacheco
Slag
BM 11
PIPELINE
Creek
Oil
REFINERY
Torches
Monsanto
AND
SANTA
Radio
Towers
VABM General
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Sewage Disposal
Chenery
Oil Reservoir
Maltby
Pacheco
POPE YA
OIL
VABM 136
SOUTHERN
SIPHON
Gaging Sta.
CONTRA
Siphon
VABM
282
Vine Hill
Las Juntas
Sch
BM 23
Gaging Sta.
ATCHISON
BLVD
Walnut
Creek
Grayson Cr
PACIFIC
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RICHMOND 21 MI.
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1 .5 0 1 KILOMETER
GN
MN
0°35'
10 MILS
17°
302 MILS
5575 (1957)
CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES IN FEET—DATUM IS MEAN LOWER LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER

APPENDIX B

Comments on the Notice of Preparation

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MT. VIEW SANITARY DISTRICT
Martinez, California • Founded 1923

BOARD OF DIRECTORS
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BOARD SECRETARY

J. Daniel Adams
LEGAL COUNSEL

Randolph W. Leptien
ENGINEER

CONTRA COSTA
08 APR 15 PM 1:08
COMMUNITY DEVELOPMENT DEPT

April 9, 2008

Contra Costa County
Community Development Department
651 Pine Street, 4th Floor, North Wing
Martinez, CA 94553-1229

Attention: Ryan Hernandez, Project Planner

Subject: Subdivision 8809, Bayview Estates
850 Central Avenue
Subdivision of Parcel 380-030-046

Dear Mr. Hernandez,

Thank you for furnishing the Mt. View Sanitary District with a copy of the Notice of Preparation and Notice of Scoping Session for the subject subdivision, which requested responses by April 19, 2008. Our comments on this notice are contained in the following attachments to this letter:

1. Letter dated October 15, 2004, from MVSD District Engineer Randolph W. Leptien to Telma Moriera of the Contra Costa County Community Development Department.

2. Letter dated October 20, 2004, from MVSD District Engineer Randolph W. Leptien to Telma Moriera of the Contra Costa County Community Development Department.

Please feel free to contact the Randy Leptien at 925 228 4218 voice, 925 228 4638 fax, or randy.leptien@lcc-inc.com email, should there be any questions.

Very truly yours,
LCC, Inc.
Randolph W. Leptien
District Engineer

By: Dave Meiser
Dave Meiser

Copy: MVSD: D. Contreras (D. Riddle)
DM

MT. VIEW SANITARY DISTRICT
3800 ARTHUR ROAD
P.O. BOX 2757
MARTINEZ, CA 94553
925-228-5635
FAX: 925-228-7585

\\Lccserver1\Data (D)\R Leptien Shared Data\MVSD\Developer Projects\Subdivisions\608 Sub 8809 Bayview\608 EIR Prep CCC Hernandez 4-9-08.doc

MT. VIEW SANITARY DISTRICT
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DISTRICT MANAGER
Sheri L. Riddle
BOARD SECRETARY

Maurice E. Huguet, Jr.
ATTORNEY

Randolph W. Leptien
ENGINEER

October 15, 2004

Contra Costa County
Community Development Department
Attn: Telma Moriera, Project Planner
651 Pine Street, 4th Floor, North Wing
Martinez, CA 94553-0095

Subject: Vesting Tentative Map
Subdivision 8809, Bayview

Dear Ms. Moriera,

Thank you for furnishing the Mt. View Sanitary District with a copy of the vesting tentative map for the referenced subdivision. The District has no objection to the development as proposed subject to the following:

1. The applicant/developer must replace existing 6 inch sewers with new 8 inch mains in the following streets and in the following quantities:

Central Avenue	1400 feet
Valley Drive	600 feet
Palms Drive	900 feet

   Pipe bursting will be an acceptable means of replacing these sewers.

2. The owner must annex the property to the Mt. View Sanitary District. Written consent to this annexation must be obtained from the Central Contra Costa Sanitary District. The developer's engineer must prepare the plats and legal descriptions which must accompany the Resolutions of the District and pay all fees required by the Local Agency Formation Commission.
3. The sanitary sewers in the new subdivision shall be centrally located in the street. Manholes shall not be located in parking strips.
4. The property owner shall dedicate sanitary sewer easements to the District for all new sewer mains not located in public streets per District requirements.
5. Each building shall be served with a separate side-sewer connected to the new main. All side-sewers shall be fitted with standard backwater prevention devices.
6. The Developer shall submit plans prepared by a California Registered Civil Engineer for review by the District Engineer for the new sanitary sewer mainline extensions and laterals. Plans shall conform to the District's Standard Specifications and Ordinances.
7. The Developer's Engineer shall submit a study verifying the capacity of all existing mains downstream of the proposed subdivision.
8. The Developer shall enter into a sewer improvement agreement with the District, and post security for sanitary sewer improvements, prior to recording the Final Map.

MT. VIEW SANITARY DISTRICT
3800 ARTHUR ROAD
P.O. BOX 2757
MARTINEZ, CA 94553
925-228-5635
FAX: 925-228-7585

MT. VIEW SANITARY DISTRICT
Martinez, California • Founded 1923

9. The Developer shall pay plan review, mapping and inspection fees, obtain a sewer construction permit, provide a cash Contractor's deposit and construct all improvements necessary for the development of the project at no cost to the District.

10. The Developer shall obtain a sewer connection permit and pay permit fees for trunk sewer, plant capacity and connection prior to connecting each dwelling unit to the District's system. The District will not issue individual connection permits until after the Sanitary Board has accepted mainline improvements for maintenance and building foundations have been constructed.

11. Fees shall be charged pursuant to the Ordinance in effect at the time that the permit is issued. Fees are subject to revision by the District Board without notice.

Please feel free to contact the undersigned at 925 228 4218 voice, 925 228 4638 fax, or randy.leptien@lcc-inc.com email, should there be any questions.

Very truly yours,
LCC, Inc.

Randolph W. Leptien
District Engineer

Encl. Agency Comment Request Form
Maintenance Map

Via facsimile no. 925 335 1222
Original will follow by mail

Copy: D. Contreras 925 228 7585
D. Isakson, Isakson & Assoc. w encl. 925 937 7926
J. Miyamoto-Mills, CCCSD 925 228 4624

FAXED

RWL/rckl

MT. VIEW SANITARY DISTRICT
Martinez, California • Founded 1923

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BOARD SECRETARY

Maurice E. Huguet, Jr.
ATTORNEY

Randolph W. Leptien
ENGINEER

October 20, 2004

Contra Costa County
Community Development Department
Attn: Telma Moriera, Project Planner
651 Pine Street, 4th Floor, North Wing
Martinez, CA 94553-0095

Subject: Subdivision 8809, Bay View
Vesting Tentative Map &
Preliminary Grading Plan

Dear Ms. Moriera,

This letter is further to our letter of October 15, 2004 regarding the referenced subdivision. The scale of the copy of the map that the District received was too small to determine the direction of sanitary sewer flow. We assumed (incorrectly) that the developer proposed to grade the lots in such a manner as to allow for gravity service to Central Avenue and Palms Drive.

We have since been furnished with a copy of the full-scale map. The developer proposes to service all but 21 of the lots in this development to the Central Contra Costa Sanitary District located to the east of the site.

This development is within the sphere of influence of Mt. View Sanitary District (MVSD). MVSD has an existing 8-inch gravity sewer located within the project limits on apn 380-030-008. This sewer is not shown on the current Tentative Map.

The crest of Central Avenue is elevation 50 more or less. Very roughly speaking, those lots which exceed elevation 60 should sewer by gravity to sewers in Central Ave. and Valley Drive. Lots with elevations of less than 60 should sewer to the existing gravity sewer on apn 380-030-008.

We respectfully request that the Vesting Tentative Map be revised as follows:

1. Indicate that this development will be served solely by MVSD.
2. Sewer the lots above elevation 60 (very approximate) to Central Avenue or Palms Drive.
3. Sewer the lots below elevation 60 to the MVSD manhole in the Contra Costa Water District Road near the west side of apn 380-030-008.
4. Indicate offsite upgrades to sewers in Central Ave. and Palms Drive as may be required.

Please feel free to contact the undersigned at 925 228 4218 voice, 925 228 4638 fax, or randy.leptien@lcc-inc.com email, should there be any questions.

Very truly yours,
LCC, Inc.

Randolph W. Leptien
District Engineer

Via facsimile no. 925 335 1222
Original will follow by mail

Copy: D. Contreras 925 228 7585
D. Isakson 925 937 7926
J. Miyamoto-Mills, CCCSD 925 228 4624

RWL/rckl

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MT. VIEW SANITARY DISTRICT
3800 ARTHUR ROAD
P.O. BOX 2757
MARTINEZ, CA 94553
925-228-5635
FAX: 925-228-7585

East Bay Regional Park District

2950 PERALTA OAKS COURT P.O. BOX 5381 OAKLAND CALIFORNIA 94605-0381 T. 1 888 EBPARKS F. 510 569 4319 TDD. 510 633 0460 WWW.EBPARKS.ORG

April 14, 2008

Ryan Hernandez
Community Development Department
Contra Costa County
651 Pine Street, 4th floor, north wing
Martinez, CA 94533-0095

Subject: Proposed Vinehill Residential Development – DEIR Scoping Comments
Waterbird Regional Preserve

Dear Mr. Hernandez,

Thank you for providing the East Bay Regional Park District ("District") with a copy of the Notice of Preparation (NOP) for preparation of an Environmental Impact Report (EIR) for the proposed Vinehill Residential Development Project ("Project"). The Project is located about ½ mile southeast of the District's Waterbird Regional Preserve in unincorporated Contra Costa County. The following our the District's scoping comments for the Project.

The Project calls for construction of 163 housing units on a 78-acre site on the visually prominent landmark known as Vinehill. This 282-foot hill is located east of Interstate 680, south of Arthur Road, west of Pacheco Slough and north of ATSF Railroad tracks. Vinehill is a steep open grassland which is visually prominent from Waterbird Preserve and I-680.

The NOP states that 42-acres of the property will be developed for residential housing. However, it does not state where within the 78-acre site the construction would occur. The "Vicinity Map" shows that the parcel includes the crest of Vinehill and its very steep flanking slopes. If development were to occur on the crest or slopes of the hill it would require significant grading, perhaps well beyond the proposed 42-acre housing site. Grading on Vinehill will be visually prominent from Waterbird Preserve. There is an uninterrupted line of sight of Vinehill from the Districts staging area. We believe that grading would result in significant visual impacts to park users at Waterbird Preserve. We request that a visual simulation be conducted of the Project from the Staging Area at Waterbird Preserve.

Thank you for the opportunity to comment on the proposed Project. Please send us one hard copy and one CD of the DEIR when released for public review. Please call me at (510) 544-2622 should you have any questions.

Sincerely,

Brad Olson
Environmental Programs Manager

Board of Directors

Ayn Wieskamp, President, Ward 5
Ted Radke, Vice-President, Ward 7
Doug Siden, Treasurer, Ward 4
Nancy Skinner, Secretary, Ward 1
Beverly Lane, Ward 6
Carol Severin, Ward 3
John Sutter, Ward 2
Pat O'Brien, General Manager

Contra Costa County **Fire Protection District**

Fire Chief
KEITH RICHTER

April 16, 2008

Mr. Ryan Hernandez
Contra Costa County
Community Development Department
651 Pine Street, 4th Floor
Martinez, CA 94553

Subject: Bayview Estates Environmental Impact Report (EIR)
Subdivision 8809
850 Central Avenue, Martinez
CCCFPD Project No. 104039

Mr. Hernandez:

We have reviewed the Notice of Preparation of an Environment Impact Report (EIR) to establish a 163-lot single-family residential development on approximately 42 acres at the subject location. The proposed development will impact the Fire District with an increase in emergency responses to this area. If this project is approved by your office, the following shall be included as part of the conditions of approval in accordance with the Health and Safety Code, the 2007 California Fire Code (CFC), 2007 California Building Code (CBC) and County Ordinances:

1. All proposed homes within this subdivision shall be protected with an approved automatic fire sprinkler system complying with the 2002 edition of NFPA 13D. (Contra Costa County General Plan)

2. A minimum of two public or private access roadways are required when serving 100 or more dwelling units. (503.1.2) CFC

3. The developer shall provide hydrants of the East Bay type. ***Hydrant quantities and locations will be determined by this office.*** (C103.1) CFC

4. The developer shall submit a minimum of three copies of site improvement plans for placement of fire hydrants, determination of required fire flow and review of access in order to assure compliance with minimum requirements as set forth in the California Fire Code.

5. Premises identification shall be provided. Such numbers shall contrast with their background and be a minimum of four inches high with ½-inch stroke or larger as required to be readily visible from the street. (505.1) CFC, (501.2) CBC

2010 Geary Road • Pleasant Hill, California 94523-4619 • Telephone (925) 941-3300 • Fax (925) 941-3309
East County • Telephone (925) 757-1303 • Fax (925) 941-3329 West County • Telephone (510) 374-7070
www.cccfpd.org

6. Emergency apparatus access roadways and hydrants shall be installed, in service, and inspected by the Fire District prior to construction or combustible storage on site. (501.4) CFC

7. Gravel roads are not considered all-weather roadways for emergency apparatus access. A minimum of the first lift of asphalt concrete paving shall be installed as the minimum subbase material and capable of supporting the designated gross vehicle weight specified above.

8. The developer shall provide an adequate and reliable water supply for fire protection with a minimum fire flow of 1000 GPM. Required flow shall be delivered from not more than one hydrant flowing for the duration of 120 minutes while maintaining 20-pounds residual pressure in the main. (508.1), (B105) CFC

9. Where existing access to open land or space, or to fire trail systems maintained for public or private use is obstructed by new development of any kind, the developer shall provide an alternate means of access into the area that is sufficient to allow access for fire personnel and apparatus. These access roadways shall be a minimum of 16 feet in width to accommodate Fire District equipment. ***Access locations will be determined by this office upon submittal of three copies of complete improvement plans.*** Contra Costa County Ordinance 2007-47

Please provide this office with a copy of the conditions of approval as set forth by your Planning Division for our files.

If you have any questions, please contact our office at (925) 941-3547.

Sincerely,

Ted Leach
Fire Prevention Technician

TL/mm
tleac@cccfpd.org

File: 104039 – 850 Central Avenue, Martinez ltr

Central Contra Costa Sanitary District

5019 Imhoff Place, Martinez, CA 94553-4392 (925) 228-9500 • www.centralsan.org

FAX: (925) 228-4624

JAMES M. KELLY
General Manager

KENTON L. ALM
Counsel for the District
(925) 938-1430

ELAINE R. BOEHME
Secretary of the District

April 17, 2008

Ryan Hernandez, Senior Planner
Contra Costa County Community Development Department
Current Planning Division
651 Pine Street, 4th Floor, North Wing
Martinez, CA 94553-0955

Dear Mr. Hernandez:

NOTICE OF PREPARATION; GP04-0007, RZ04-3148, DP04-3080, SD04-8809; GENERAL PLAN AMENDMENT, REZONING, MAJOR SUBDIVISION AND FINAL DEVELOPMENT PLAN FOR "BAYVIEW ESTATES"; 163 LOT RESIDENTIAL PROJECT; CENTRAL AVENUE AND PALMS DRIVE AREA, UNINCORPORATED MARTINEZ; APN: 380-030-046; MAP 10E2; MVSD SERVICE AREA

The Central Contra Costa Sanitary District (CCCSD) is an affected property owner within the project area. CCCSD's wastewater treatment plant property is as close as 1,400 feet east of the project site, and other uses incompatible with residential development are also nearby. The proposed General Plan amendment would change the site's land use designation from "Heavy Industrial" to "Single-Family High." The applicant has also submitted a vesting tentative map for 163 residential lots and has identified CCCSD as a possible wastewater utility service provider for some of those lots. CCCSD's specific concerns regarding these issues, explained below, should be addressed in the project's Environmental Impact Report (EIR).

WASTEWATER UTILITY SERVICE: While the vesting tentative map shows CCCSD providing wastewater utility service to a portion of the proposed project, CCCSD does not intend to provide such service. This project is wholly within the Sphere of Influence of Mt. View Sanitary District and that agency has indicated to CCCSD that it is willing to provide service to the whole project. This jurisdictional matter needs to be clarified in the EIR.

LAND USE CONCERNS: While CCCSD is sensitive to the County's obligation to meet the housing needs of our community, CCCSD is seriously concerned about a proposal to take "Heavy Industrial" designated land, which is compatible with our nearby treatment plant and Maltby Pumping Station operations, and convert it to a residential use, which is much less compatible. Residences would be much more sensitive to odors, dust, and noise associated with our existing and future operations, as well as other nearby, heavy industrial uses, including the existing refineries, garbage transfer station, railroad, petroleum and natural gas pipelines, and capped toxic wasted ponds, and a construction material manufacturing and trucking yard operation below and east of the project site (see Attachment A).

Recycled Paper

The project, therefore, would have significant, unavoidable land use incompatibility impacts with the existing, well-established land uses in the area. This issue needs to be addressed in the EIR.

CCCSD has long opposed area developments that would convert a "Heavy Industrial" designated property to a more sensitive land use (e.g. rejected County proposals for a truck stop or a homeless shelter on Imhoff Drive) or that would introduce non-Heavy Industrial traffic into the area (e.g. the rejected Waterbird Way extension to Imhoff Drive as part of the Solano Way closure). CCCSD believes, therefore, that the subject property is appropriately planned for Heavy Industrial use and should remain so.

If you have any questions regarding these comments, please contact Environmental Services Division Manager Curtis Swanson at 925-229-7336.

Sincerely,

James M. Kelly

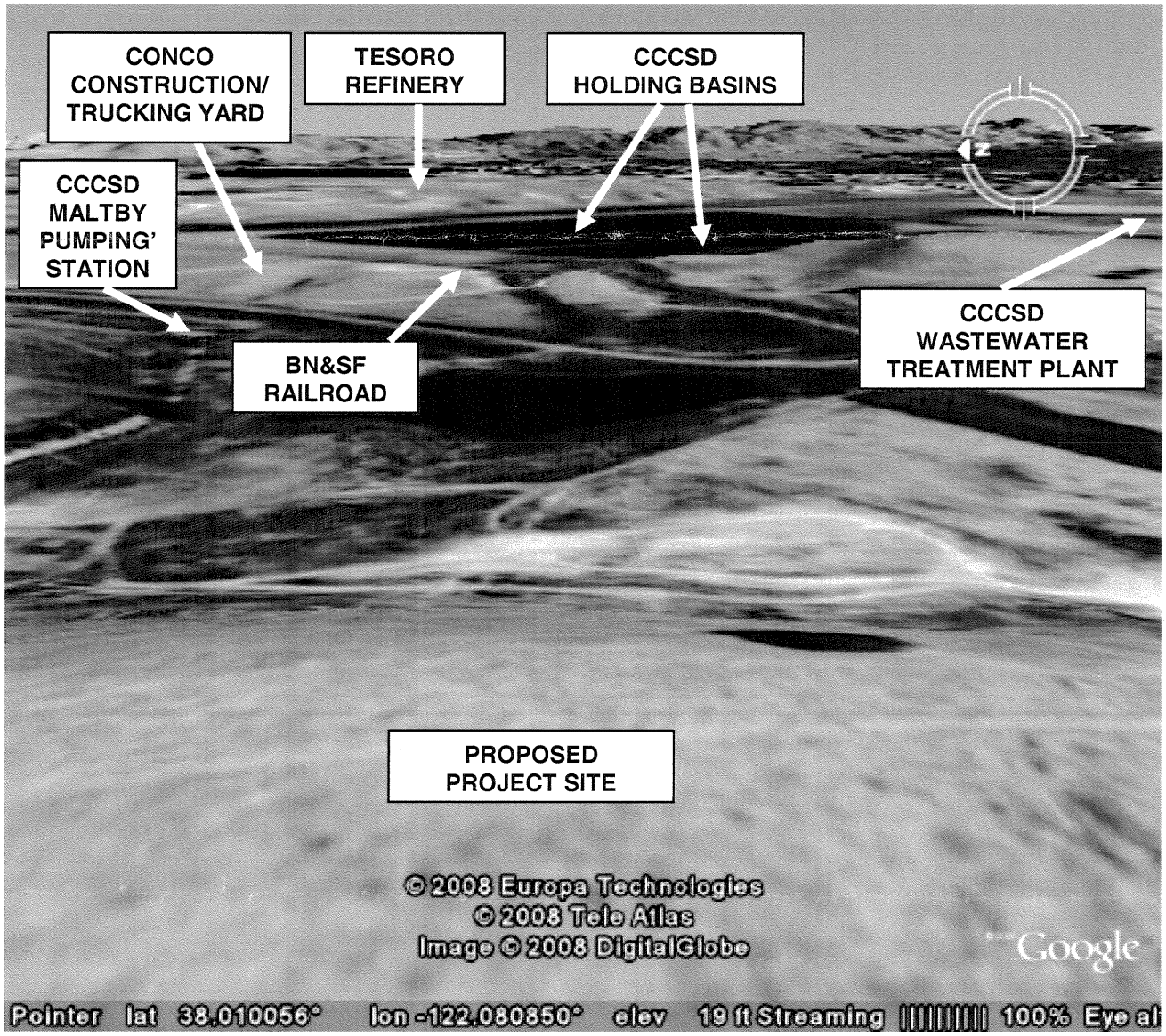
James M. Kelly
General Manager

JMK/RBL/mvp

cc: D. Contreras, MVSD
A. Farrell, CCCSD
R. Leavitt, CCCSD
R. Leptien, MVSD
C. Swanson, CCCSD

ATTACHMENT A

View from atop the project site looking downhill and to the east. Visible, incompatible uses include several CCCSD wastewater facilities, the Tesoro refinery, Conco's construction material manufacturing and trucking yard site, and the BN&SF Railroad.



CONTRA COSTA LOCAL AGENCY FORMATION COMMISSION
651 Pine Street, Sixth Floor • Martinez, CA 94553-1229
e-mail: LTexe@lafco.cccounty.us
(925) 335-1094 • (925) 646-1228 FAX

08 APR 21 AM 8:50
COMMUNITY DEVELOPMENT DEPT

April 18, 2008

Ryan Hernandez, Senior Planner
Contra Costa County
Community Development Department
651 Pine Street, 4th Floor – North Wing
Martinez, CA 94553

SUBJECT: Notice of Preparation – Environmental Impact Report for the Proposed Bayview Estates Residential Project

Dear Mr. Hernandez:

Thank you for including the Contra Costa Local Agency Formation Commission (LAFCO) in the environmental review process for the above project. In response, we offer general and specific comments below.

General Comments

As a Responsible Agency pursuant to the CEQA, LAFCO may need to rely on the County's environmental document for this project in consideration of any subsequent boundary change (e.g., annexation) or sphere of influence (SOI) applications relating to this project.

LAFCO is an independent, regulatory agency with discretion to approve or disapprove, with or without amendment, wholly, partially or conditionally, changes of organization or reorganization. LAFCO is required to consider a variety of factors when evaluating a project, including, but not limited to the proposed project's potential impacts on agricultural land and open space, the provision of municipal services and infrastructure to the project site, the timely and available supply of water, etc.

The factors relating to boundary changes and SOI amendments are contained in the Government Code and presented in the attachments. We encourage you to reference these factors as appropriate, in your environmental document(s). This will help facilitate the LAFCO application process. Failure to do so may result in additional CEQA compliance work on the part of the applicant.

If LAFCO will be asked to rely on the County's EIR for a future boundary change (i.e., SOI amendment, annexation, etc.), the document should specifically reference the LAFCO action(s) in the Project Description, LAFCO should be listed as Other Public Agencies Whose Approval is Required; and most importantly, the LAFCO action(s) and relevant factors per the attachments should be adequately evaluated in the DEIR. For example, if the project will require an SOI amendment and/or annexation to the Central Contra Costa Sanitary District (CCCSD), annexation to CSA L-100, or other boundary changes, these actions and the relevant factors listed in the attachments must be specifically addressed in the EIR.

Specific Comments

1. In reviewing the project and the affected parcel, we note that the parcel is not currently being assessed for water or sanitary sewer services. Should the County wish to rely on this EIR for the future annexation of these parcels to water and/or sewer districts, then LAFCO should be identified as a Responsible Agency, the LAFCO actions relating to SOI amendments and/or annexations should be identified in the Project Description, and the needed utility services should be evaluated in the appropriate sections of the EIR.

2. In reviewing the project, we note that the parcels are not currently being assessed for street lighting services. Should the County wish to rely on this EIR for the future annexation of this project site to CSA L-100, then LAFCO should be identified as a Responsible Agency, the LAFCO action relating to annexation should be identified in the Project Description, and street lighting services should be evaluated in the appropriate section(s) of the EIR.

Thank you for the opportunity to comment. We look forward to receiving a copy of the County's draft environmental documents relating to this project. Please contact the LAFCO office if you have any questions.

Sincerely,

Lou Ann Texeira
Executive Officer

Attachments

c: Silvano Marchesi, LAFCO Legal Counsel
LAFCO Planner

56425. (a) In order to carry out its purposes and responsibilities for planning and shaping the logical and orderly development and coordination of local governmental agencies *** to advantageously provide for the present and future needs of the county and its communities, the commission shall develop and determine the sphere of influence of each local governmental agency within the county and enact policies designed to promote the logical and orderly development of areas within the sphere.

(b) ***<u>**Prior**</u> to <u>**a city**</u> submitting an application to the commission *** to update *** <u>**its**</u> sphere of influence ***, representatives from the city *** <u>**and representatives from the**</u> county *** <u>**shall meet**</u> to discuss the proposed *** <u>**new boundaries of the sphere**</u> and explore methods to reach agreement on *** <u>**development standards and planning**</u> and zoning requirements within the sphere to ensure that development within the sphere occurs in a manner that reflects the concerns of the affected city and is accomplished in a manner that promotes the logical and orderly development of areas within the sphere. ***If an agreement is reached between the city and county <u>***, **the city shall forward the agreement in writing to the commission, along with the application to update the sphere of influence. The**</u> commission shall consider and adopt a sphere of influence for the city consistent with the policies adopted by the commission pursuant to this section, and the commission shall give great weight to the agreement *** <u>**to the extent that it is consistent with commission policies in its**</u> final determination of the city sphere.

(c) If the commission's final determination is consistent with the agreement reached between the city and county pursuant to subdivision (b), the agreement shall be adopted by both the city and county after a noticed public hearing. Once the agreement has been adopted by the affected local agencies and their respective general plans reflect that agreement, then any development approved by the county within the sphere shall be consistent with the terms of that agreement.

(d) If no agreement is reached pursuant to subdivision (b), the application may be submitted to the commission and the commission shall consider a sphere of influence for the city consistent with the policies adopted by the commission pursuant to this section.

(e) In determining the sphere of influence of each local agency, the commission shall consider and prepare a written statement of its determinations with respect to each of the following:

(1) The present and planned land uses in the area, including agricultural and open-space lands.

(2) The present and probable need for public facilities and services in the area.

(3) The present capacity of public facilities and adequacy of public services that the agency provides or is authorized to provide.

(4) The existence of any social or economic communities of interest in the area if the commission determines that they are relevant to the agency.

(f) Upon determination of a sphere of influence, the commission shall adopt that sphere.

(g) On or before January 1, 2008, and every five years thereafter, the commission shall, as necessary, review and update each sphere of influence.

(h) The commission may recommend governmental reorganizations to particular agencies in the county, using the spheres of influence as the basis for those recommendations. Those recommendations shall be made available, upon request, to other agencies or to the public. The commission shall make all reasonable efforts to ensure wide public dissemination of the recommendations.

(i) When adopting, amending, or updating a sphere of influence for a special district, the commission shall do all of the following:

(1) Require existing districts to file written statements with the commission specifying the functions or classes of services provided by those districts.

(2) Establish the nature, location, and extent of any functions or classes of services provided by existing districts.

***

<u>**(Amended by Stats. 2007, Ch. 167.)**</u>

Government Code §56668. Factors to be considered in the review of a proposal shall include, but not be limited to, all of the following:

(a) Population, population density; land area and land use; per capita assessed valuation; topography, natural boundaries, and drainage basins; proximity to other populated areas; the likelihood of significant growth in the area, and in adjacent incorporated and unincorporated areas during the next 10 years.

(b) The need for organized community services; the present cost and adequacy of governmental services and controls in the area; probable future needs for those services and controls; probable effect of the proposed incorporation, formation, annexation, or exclusion of alternate courses of action on the cost and adequacy of services and controls in the area and adjacent areas. "Services", as used in this subdivision, refers to governmental services whether or not the services are those which would be provided by local agencies subject to this division, and includes the public facilities necessary to provide those services.

(c) The effect of the proposed action and of alternative actions on adjacent areas, on mutual social and economic interests, and on the local government structure of the county.

(d) The conformity of both the proposal and its anticipated effects with both the adopted commission policies on providing planned, orderly, efficient patterns of urban development; and the policies and priorities set forth in Government Code §56377.

(e) The effect of the proposal on maintaining the physical and economic integrity of agricultural lands, as defined by Government Code §56016.

(f) The definiteness and certainty of the boundaries of the territory, the nonconformance of proposed boundaries with lines of assessment or ownership, the creation of islands or corridors of unincorporated territory, and other similar matters affecting the proposed boundaries.

(g) Consistency with city or county general and specific plans.

(h) The sphere of influence of any local agency which may be applicable to the proposal being reviewed.

(i) The comments of any affected local agency.

(j) The ability of the newly formed or receiving entity to provide the services which are the subject of the application to the area, including the sufficiency of revenues for such services following the proposed boundary change.

(k) Timely availability of water supplies adequate for projected needs including, but not limited to, the projected needs as specified in §65352.5.

(l) The extent to which the proposal will assist the receiving entity in achieving its fair share of the regional housing needs as determined by the appropriate council of governments.

(m) Any information or comments from the land owners or owners, voters or residents of the affected territory.

(n) Any information relating to existing land use designations.

(o) *The extent to which the proposal will promote environmental justice. As used in this subdivision, "environmental justice" means the fair treatment of people of all races, cultures, and incomes with respect to the location of public facilities and the provision of public services.* **(effective 1/1/08)**

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 622-5491
FAX (510) 286-5559
TTY 711

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COMMUNITY DEVELOPMENT DEPT

Flex your power!
Be energy efficient!

March 28, 2008

CC680589
CC-680-22.697
SCH2008032074

Mr. Ryan Hernandez
Contra Costa County
Community Development Department
651 Pine Street – 2nd Floor, North Wing
Martinez, CA 94553

Dear Mr. Hernandez:

Bayview Estates Residential Project – Notice of Preparation

Thank you for including the California Department of Transportation (Department) in the early stages of the environmental review process for Bayview Estates Residential Project. We have reviewed the Notice of Preparation for the Draft Environmental Impact Report and have the following comments to offer:

As lead agency, the County is responsible for all project mitigation, including improvements to State Highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures. Any required roadway improvements should be completed prior to issuance of the project's building permit. While an encroachment permit is only required when the project involves work in the State Right of Way (ROW), the Department will not issue an encroachment permit until our concerns have been adequately addressed. Therefore, we strongly recommend that the lead agency ensure resolution of the Department's concerns prior to submittal of an encroachment permit application. Refer to the end of this letter for more information regarding encroachment permits.

Traffic Impact Analysis
The Department is primarily concerned with impacts to the State Highway system. Specifically, the detailed Traffic Impact Analysis (TIA) should identify impacts to all state facilities with and without the proposed Bayview Estates Residential Project's traffic. The TIA should include, but is not limited to the following:

1. Information on the project's traffic impacts in terms of trip generation, distribution, and assignment. The assumptions and methodologies used in compiling this information should be addressed.

2. Average Daily Traffic (ADT) and AM and PM peak hour volumes on all significantly affected streets and highways, including crossroads and controlling intersections.

3. Schematic illustration of the traffic conditions for: 1) existing, 2) existing plus project, and 3) cumulative for the intersections in the project area.

4. Calculation of cumulative traffic volumes should consider all traffic-generating developments, both existing and future, that would affect the State Highway facilities being evaluated.

5. Mitigation measures should consider highway and non-highway improvements and services. Special attention should be given to the development of alternate solutions to circulation problems that do not rely on increased highway construction.

6. All mitigation measures proposed should be fully discussed, including financing, scheduling, implementation responsibilities, and lead agency monitoring.

We recommend you utilize Caltrans' *"Guide for the Preparation of Traffic Impact Studies"* which can be accessed from the following webpage:
http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

We look forward to reviewing the TIA, including Technical Appendices, and Draft Environmental Impact Report for this project. We expect to receive a copy from the State Clearinghouse, but in order to expedite our review, you may send two copies in advance to:

Christian Bushong
Office of Transit and Community Planning Office, MS 10D
California DOT, District 4
P. O. Box 23660
Oakland, CA 94623–0660

Cultural Resources
Should project plans include construction activities within State ROW for this project, the Department requires documented results of a current archaeological record search from the Northwest Information Center (NIC) of the California Historical Resources Information System before an Encroachment Permit can be issued. Current record searches must be no more than five years old. The Department requires the records search, and if warranted, a cultural resource study by a qualified, professional archaeologist, to ensure compliance with NEPA (if there is federal action on the project), CEQA, Section 5024.5 of the California Public Resources Code (for state-owned historic resources) and Volume 2 of the Department's Environmental Handbook (Caltrans Standard Environmental Reference (SER) at http://www.dot.ca.gov/hq/env/index.htm). Work subject to these requirements includes, but is not limited to: lane widening, channelization, auxiliary lanes, and/or modification of existing features such as slopes, drainage features, curbs, sidewalks and driveways within or adjacent to State ROW.

Hydraulics
The DEIR should include a hydrology report and detailed technical drawings for any conveyance system and on-site detention basins. In addition, mitigation measures should be discussed in detail.

Encroachment Permit
Please be advised that work that encroaches onto the State ROW requires an encroachment permit that is issued by the Department. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans, clearly indicating State ROW, must be submitted to the address below. Traffic-related mitigation measures will be incorporated into the construction plans during the encroachment permit process. See the following website link for more information: http://www.dot.ca.gov/hq/traffops/developserv/permits/

Mr. Michael Condie, Office of Permits
California DOT, District 4
P.O. Box 23660
Oakland, CA 94623-0660

Should you have any questions regarding this letter, please call Christian Bushong of my staff at (510) 286-5606 or christian_bushong@dot.ca.gov.

Sincerely,

for LISA CARBONI
District Branch Chief
IGR/CEQA

c: State Clearinghouse

Ryan Hernandez

My name is Sharon Kennedy. We live at 4275 Valley Ave. Just built a new house on prop. Right across the street from our previous home, 580 Central Ave.

We have resided in Vine Hill a long time. Me since 1954, my husband since 1959.

We are very concerned about the proposed housing developement planned for the end of Central Ave.

As you surely know, there is one way in and one way out of Vine Hill. That currently is right down Central Ave. To Arthur Rd. According to this map we received, that will be a main way to these new homes, and possibly another way would be via Palms Drive. Which is a private road owned by the property owners. The traffic impact on this small neighborhood would be horrendous, as it already is way too busy of a street. The street right at the corner of Valley and Central has a very odd curve to it, and there have been several accidents right here. Telephone poles knocked down, one started one of our trees on fire; cars hit, children hit, cars in ditches, etc. My husband had to put ballards up all around his mothers home, (where we now live) because he was afraid someone would come right through the house. That's with the current traffic. What would it be like with 300+ more cars traveling this tiny street?

Aside from the traffic impact, what would happen to all the wildlife that lives down there right where they propose to build? They would lose their habitat, and we would lose the privilege of having them in our neighborhood forever. As of now they roam right down our streets. Wild turkeys we see grow up , birds nesting in our eaves, not to mention the raccoons, fox, and other animals that frequent our area. Are they going to insure they have the marshes stay down there where so many live?

How will the traffic come and go? Right now this area has one entrance and one exit. What is your proposal as far as not having all this new traffic coming and going on Central Ave.?

Also we hear we will now be responsible for curb and gutters on the one side of the street. Why is that, and is that true? They want to build houses down there, let them pay for the curb and gutters. We didn't ask for this and certainly have been doing just fine the way we were.

As far as cutting the top off Buffalo Hill, what kind of crazy idea is that? So we can all start breathing in all the fumes from the Tesoro plant? That hill is all that separates us from the fumes and who knows what else comes from there.

There will be a petition enclosed with this letter of residents who also oppose this development as it stands. There has to be another way to enter that area and exit besides right down this little street that doesn't even have a white line painted down the middle.

Another great concern we have is Las Juntas school. It is already full to the max. Where would all these new children go to school? Are you planning on building a new school? And what about a fire dept.? With all the houses already built in our area, plus the ones being built on Pacheco Blvd., plus these 162, we will need another fire dept. in my opinion.

Thank you,

Sharon Kennedy
Bennie Kennedy
4275 Valley Ave.
Martinez, CA

Sharon Kennedy
Bennie Kennedy
Edward A. Raya

4/7/2008

we as residents and homeowners of the Vine Hill area totally oppose the proposed housing development as it now stands. Below are names, addresses and phone numbers of the concerned homeowners concerning this matter.

1. DARCY WAHBA 925-915-1474
2. Melissa Katayanagi 925-370-8730
3. Karri Flowers 925-229-3607
4. Marc Matute 370-8131
5. William J [illegible] 925-372-7294
6. Jaime Zamora 4216 Valley Ave Martz (925) 3726843
7. [illegible] 925-370-0370
8. Heidi Medeiros (925) 519-3264
9. Donny DARRAH (925-228-2576)
10. Dalen Fitzhal 4180 Valley ave Martinez Calif 94553
11. JOSE A DE LATORRE (808-9482
12. [illegible]
13. James A Kummer 925-372-7113
14. Patricia E Lee 925 370-0934
15. Flora Kummer 925-372-7113
16. Michelle Reeder 50 Arthur Rd #210
17. TERRY DECARLO JR (925) 787-7960
18. Olga Lemash
19. Mark O'Hara 100 Cambark Ct
20.
21. Margaret [illegible]
22.
23. Dan L. Reeder
24.
25. W. Gore
26.
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CONTRA COSTA
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DEVELOPMENT DEPT

CONTRA COSTA
08 APR 17 PM 12: 10
DEVELOPMENT DEPT

April 8, 2008

To whom it may concern:

My name is Jennifer Brennan my husband Mike and I live at 550 Central Ave. We moved to Martinez 15 years ago because of the small town feel and abundant open space. 12 years ago we purchased our home and own it out right. It saddens us to see that much of the open space in Martinez is quickly disappearing. It seams that every lot available is being crammed with houses. Every time a housing development is built it leaves less and less nature in our beautiful town.

We are very concerned about the proposed housing development to be built at the end of Central Ave for two reasons. The first is the Wildlife that lives in the area right where you propose to build. With the encroachment on more open space the animals in the area would lose their habitat.. Right now we have several visitors to our yards because of that area including wild turkeys, several species of birds, opossums, skunks, frogs, raccoons, fox, and other animals that live in that area. On several occasions I have even heard Coyotes. Building in this area would leave these beautiful animals with no place to go. How is this development going to effect marsh? After everything that has gone into restoring the Marsh what is going to happen to it? Thinking of more nature being gone is disturbing to say the least.

The second is the additional cars that will be traveling down Central Ave. As you know, there is one way in and one way out of Vine Hill. That is Central Ave to Arthur Road, which already has a horrendous traffic problem. Some times it takes over 5 minutes to back out of my driveway (I live on a hill with a clutch) I hate to imaging what it will be like with 300 to 400 more cars speeding down the street. Yes speeding sometimes at 90 miles an hour! Several cars, dogs, houses, cats, wildlife, trees, telephone poles, and a few kids have been hit over the years I have lived here. This is just going to add havoc on an already bad problem. We have also heard that we will be responsible for curb and gutter on the one side of the street. If this is in anyway true that responsibility needs to fall on the developer making all the money from ruining our neighborhood. Not the hard working homeowners that have absolutely nothing to gain and a lot to loose by this development.

Since I am not one to complain with out offering a solution, my solution is to not build it at all. But if this development is to be built I think it should be done so with minimal environment impact. Make the houses as green and sustainable as possible using LEED design standards http://www.usgbc.org.
How about solar or turbine power? How about an eco village? There is one on this page built by a marsh (Marsh Commons)
http://www.ecobusinesslinks.com/sustainable_communities.htm
With all the available resources, and new building practices if you build it do the right thing and build it right.

Thank you,

Mike Brennan

Jennifer Brennan

Mike Brennan
Jennifer Brennan

Edward A. Raya

Collected by church:

4/7/2008

we as residents and homeowners of the Vine Hill area totally oppose the proposed housing development as it now stands. Below are names, addresses and phone numbers of the concerned homeowners concerning this matter.

1. Abel Leon
4361 Cabrilho Dr
Martinez Ca. 94553.
2.
3. ALONSO RANGEL
4291 CABRILHO DR.
(510) 325-3500
4.
5.
6.
7. DOUG BAYER
285 3202 Cell#
8.
9. Francisco Morales
4205 cabrilho Dr
Martinez ca 94553
10.
11.
12.
13. 370-0752
JOSÉ PUENTE
14.
15. 4141 CABRILHO DR.
MTZ. CA. 94553
16.
17.
18.
Dan Bong
19. 4142 Cabrilho Dr
Martinez, Ca 94553
20.
21. Abdullah Taleb
Martinez, CA 94553
22.
23. Gloria Bugallo
4095 Cabrilho Dr.
Mtz, CA 94553
24.
25.
26.
Jennifer Brennan
27. 550 Central Ave
Martinez CA
28.
29. Mike Brennan
550 Central Ave
MARTINEZ 94553
30.
31.
32.
925-229-4215
33.
34.

CONTRA COSTA

08 APR 17 PM 12: 10

DEVELOPMENT DEPT

April 10, 2008

Our names are Gale & Mildred Floyd.
We live at 770 Central Ave Martinez, Ca. in the Vine Hill area, we have lived here more than fifty years, Our Children grew up here and went to school at Las Juntas.

Our Children went fishing down on this property in question, we remember the old horse ranch down there, and the Buffalo down there as well as many other animals that roamed on this land and we still have red& gray fox, fish & frogs, and wild turkeys among other species down there we do not want these destroyed. This is WETLANDS and we do not want it destroyed we enjoy there animals that are currently in the wetlands area.

We the Property owners and residents of the vine hill area strongly oppose the building of 163 homes on the 80 acres at the end of central avenue, by the Discovery Builders Inc.(applicant)-Boyd Olney Jr.(owner) County files: GP04-0007,RZ04-3148,DP04-3080andSD04-8809:name Bay View Estates residential estates project. Parcel #(380-030-046.) RAH.

This is a private road and our deed state it is a private road and a very narrow road approx one lane, we will not give permission to use this road, and due to this would create a massive traffic problem. The county never made the wood farm do a traffic study report as promised and as stated in the land use permit and as of today it still has not been done. We want our peace and quiet since we have to maintain our road we are not willing to let anyone use it other then the utility companies that have to get in.

Another major problem would be WHAT ABOUT A DISASTER.? It would be hard to get in or out of this neighborhood since there is only one way in and out and by adding 163 more homes is going to make it a total disaster.

We are very concerned as to what lies around and under that land we do know that when that old horse ranch was torn down there was a lot of stuff buried and dirt hauled in until fish and game stopped it.

There is a creek down there as well as an overflow of that canal and a pond, which all could be dangerous to children living there. This is also in the flood zone area of that property why would you want to build or live in a flood zone.

Henry's wood farm has been a problem on our road for years, we have eaten the dust and dirt from the speeding tree trimmer trucks the rumble and vibration noise, tearing up the road and not willing to fix our road, fire wood customers speeding in and out buying fire wood, not to mention all the 5 fires at that wood yard.

We got the county and the fire department after 8 months of complaining to pull the wood yard's land use permit they were suppose to get that mess cleaned up but as of to date there is still an a mess out there and the county has neglected to follow up on the clean up of Henrys wood farm.

Then Conco decides to use our street to move in their heavy equipment and all materials to build their facility down there in the area in question, we ran them out close to the end of completion, No one gave them permission to go through here while they where building there nice new road and tearing our road up.

Most of us own our property out here and have some pride of ownership we pay our taxes, this all has degraded the look and value of our property, we have had it we want no more, we want to be left alone, and we want our road left alone since no one wants to fix it we want them to stay off it. We are not letting you dump on us anymore.

What about a school? Las Juntas is already overloaded, and Morello can not handle the load either they currently have a waiting list. (Will there be a new school?)

What about a fire department? They hate the problems they have had with Henry's Wood farm due to lack of being able to get their trucks and equipment in there property due to massive piles of wood chips which the county still has not made them clean up and the are still consider a fire hazard. (Will you be building us a new fire dept?)

What about police protection due to we live in the "unincorporated area" of Martinez we can only get the sheriff to respond and then the response is very slow due to the volume of problems the sheriff has to handle.(will we get incorporated and get a police department).

Thank You
Mildred Flood
Gale Flood
Edward A. Page

4/7/2008

we as residents and homeowners of the Vine Hill area totally oppose the proposed housing development as it now stands. Below are names, addresses and phone numbers of the concerned homeowners concerning this matter.

1. Tanya Andrews, R. Andrews 925-957-6049
701 Michele DR. MTZ 94553

2. Amy Ward 372-3855
4291 Irene Dr, Martinez, CA

3. Mildred Floyd 925 372-3227
770 Central Ave Martinez

4. Jason Sterry 318-0085
4291 Irene Dr, Martinez, CA

5. Dale Floyd 925 372-3227
770 Central Ave Martinez Ca.

6. Gerald Smith 760 Central AVE Martinez CA. 370-8784

7. Janet Floyd 372-3227
770 Central ave Mtz Ca

8. Rozelyn Smith 760 Central AVE. Martinez CA. 370-8784

9. Marlena Castro 796 Central Ave 925 602-7055

10. Jeanette Kifer 794 Central Ave. Mtz
Brittney Kifer
925-957-0327

11. Dorothy Sakowski 737 Central Ave. Mtz Ca 925 372-1271

12. Roberta Guetschow 818-7133707 Central Av. Tel 451-9471

13. 737 Central Ave, Martinez, CA

14. [illegible] 750 Central AVE 925 228-0579

15. Lizzie M. Gisham 228-4909
731 Central Ave.
Martinez, Ca. 94553

16. Cynthia Cuevas 925 228-0579

17. Paul Cuevas 731 Central Ave
MARTINEZ CA 94553 228-5689

18. 750 Central Ave

19. Chuck Ler 228-5689
4184 Irene Dr
Martinez CA 94553

20. Larry Thomas
736 Central Ave 925-229-9247

21. Janet Youree 372-3696
719 Central Avenue

22. Gwendulyn Gale
750 Central AVE

23. Adam Youree 260-6823
719 Central Avenue

24. Alexandra Gale
750 Central AVE

25. Ralph Flachsbart (856) 885-0598
713 Central Ave

26.

27. Gerald W. Medders
662 Central Ave. Mtz

28.

29. Amalia Kurzeski
662 Central Ave Mtz

30.

31. Lisa Villaseno
750 Central Ave Mtz

32.

33.

34.

35. Maulani Wright 228-2280
4146 Rita Dr.

36.

37. June Cramer
14157 Rita Dr

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CONTRA COSTA

4/7/2008

we as residents and homeowners of the Vine Hill area totally oppose the proposed housing development as it now stands. Below are names, addresses and phone numbers of the concerned homeowners concerning this matter.

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DEVELOPMENT DEPT

1. Richard J. Joachim Sr. 4118 Irene Dr, Mtz Ca 94553 Richard Joachim 925-372-8118	2. ALFRED GONZALES 151 B ARTHUR RD. MARTINEZ CA 94553 (925) 812-090
3. Edward A. RAYA 545 CENTRAL AVE. MTZ, CA. 94553 925-228-3041	4. PAT TALBOTT 229-9648 530 CENTRAL AVE, MTZ 94553
5. REINE TALBOTT 229-9648 530 CENTRAL AVE. 94553	6. Jessie Henderson 370-0287 535 CENTRAL AVE MTZ 94553
372 74107. MARCO Velasquez 372 497 67 60 4164 Valley Ave MTZ CA 94553	8. Dalene Rule 517 Dorothy Lane, Martinez, CA 94553
9. William SHINABERY 4230 ARTHUR RD MTZ CA 94553	10. Charles Perry 4365 ARTHUR RD MTZ CA 94553
11. J. ROBERTS 4146 Central	12. Larry Odom 4375 Arthur Rd 94553 Needs impact study for Traffic
13. Rea bin Norman & Healing	14. MTZ 555 Central Donald Hop 229-929
24 1208 Cindy Pierce 4341 Arthur	16. 4346 ARTHUR Rd 899-1760
229-2716 197-8311	17. CAROLYN SEPULVEDA 525 CENTRAL AVE MTZ, CA. 94553
372-6810 768-3536-Cel	19. Debra K. Vann, 4345 Arthur Rd Martinez CA 94553
25) 399-1760	21. Kathleen Smith 4346 Arthur Rd Martinez, Ca 94553
925-377 1979	23. EDUARDO PADILLA 565 Central Ave MARTINEZ CA 94553
925-372 3249	25. Darren + Christina Chavez 4218 Cabrillo Dr Martinez, CA 94553
925) 228-1754	27. Vickie & Ron McPhee 651 Donna Drive Martinez, CA 94553
29. Kirk Fidler 925-229-1057 4117 Rita Dr MTZ CA 94553	30. Maria del Rosario Rochin 4106 Rita Dr. (925) 229-0434
31. PAULA Fidler 4117 Rita Dr MTZ CA 94553 229-1057	32. Dee Moore 4101 Rita Drive MTZ. CA. 94553 (925) 229-0133
33. 611 Donna DR MATINEZ 925-28138	34. Carlos Rodriguez 611 DONNA DR. 228-6380

Janet Burt 4327 Arthur Rd MTZ-Ca 229-0577

4/7/2008

we as residents and homeowners of the Vine Hill area totally oppose the proposed housing development as it now stands. Below are names, addresses and phone numbers of the concerned homeowners concerning this matter.

35. DAN WILLARD

36. Mark Ralston

37. SHANE PEACOCK

38. John A Thomson 2840 Pacheco Blvd MTZ John A Thomson (925) 497-5014

39. Harold Arnaudon

40. MTZ CA. 94553 Josefina Raya 545 Central Ave. (925) 228-3041

41. Shannon Arnaudon

42. Vicky Kirwald 564 Palms Dr Martinez Vicky Kirwald 925 228-4898

228-6522 43. William L Duncan 4167 Rita Dr MTZ

44. Chris Shanahan 559 Palms Dr Chris Shanahan 925-212-5798

229-3841 45. Gloria Zepeda 4187 Rita Dr Martinez 94553

46. MARK PROSSER I 544 PALMS - 228-6260

228-0284 47. Lorraine Garrah 4197 Rita Dr Martinez CA 94553

48. Cynthia West 925-335-0288 552 PALMS Dr. MARTINEZ. 94553

348-3214 49. Jose Esparza 611 Michele Dr Martinez Ca 94553

50. Jessica Brophy Jessica Brophy 545 Palms Dr. MTZ 640-330

51. D.L. Walker 721 Michele Dr mtz. 228-6242

52. ROGER GOODWIN 515 PALMS DRIVE MTZ 957-9622

53. E.E. Martin 730 Michele - Martinez 228-5033

54. Manuel D. RAMA 228-3041 545 CENTRAL AVE

55. Ramona Bond 700 Michele Drive Martinez CA 94553 229-3215

56. (925) 372-6916 4345 Hathaway Rd Martinez 94553

57. Katherine R. Bunyard 620 Michele Drive Martinez Ca 94553 228-6991

58. Don Kennedy 812-9093 559 Palms Dr Martinez

59. LUIS PEREZ 4196 RITA DR MARTINEZ CA 94553 925 3700997

60. Douglas Kennedy 559 Palms DR.

61. Michelle Araya 4125 Rita Dr 94553 925 957-0742

62. Carl Deike 546 Palms dr.

63. Marie Araya 4125 Rita Dr mtz 925 957-0742

64. Melissa Martinez 540 Palms Dr. MTZ CA 94553

65. Marie Araya 4125 Rita Dr mtz 925 957-0742

66. Mary M. McGuire 540 Palms Dr. Martinez Ca 94553

67. MIKE CASEY 4138 Rita DR 925 135-8829

68. Rosa Martinez 560 Palms Dr 229-3291

69. Bonnie Casey 4138 Rita DR 925 135-8902

70. Renee Martinez 560 Palms Dr Mtz 229-3291

71. Don McAredle 4138 Rita DR 925 228-3563

72.

73. WAYNE SKINNER (925)812-2650
601 DONNA Dr.
MTZ. CA. 94553

74. Hilda Morales
4206 Arthur RD.
Martinez Cal 94553

75. Elias Morales
4206 Arthur Rd
Mtz. CA 94553

76. Arthur Rd 370-6861
Rosario morales 4206 94553

77. Cheri Roberts

78. 4146 Cabrilho DR. 372-6501
Martinez, Ca. 94553 Cheri Roberts

79. Nichole Schiller

80. 4146 Cabrilho DR. 372-6501
Martinez 94553 Nichole Schiller

81. Wanul Mohanth. 229-0434
4106 Rita dr. MTZ. CA. 94553

82. Alicia Perez
3957 Via Estrella (925) 957 9439
Martinez CA 94553

83. DARREN VIEIRA - 382-0010
4364 Arthur rd MTZ. CA 94553

84. Rick Detton (925)
497 ARTHUR RD. 228-5217

85. Dorrightmel Issa heuyen (707)
4169 Arther rd, Martinez CA. 980-3413

86. Jose Fer 925-228-7244
4160 Arthur Road Martinez CA 94553

87. Carl Lamb
4188 Rita Dr.
Martinez, Ca.

88. Jaime Roman (925) 229-2794
530 Arthur Rd Martinez, CA 94553

89. Olga Limon 372-8014
487 Arthur Rd
Martinez

90. Mrs. Vicki Welle
4148 Arthur Rd. 94553

91. NORBERTO MARTINEZ
438 CABRILHO DR.
MARTINEZ 94553-925-229254

92. David Welle
468 ARTHUR Rd 94553

93. Brandon Owens
11 Leabig Ln Martinez CA 94553

94. Thma E. martinez 925) 229-2545
4381 CABRILHO DR martinez

95. Ryan Brigance 925-957-0583
520 Central Ave Martinez, CA 94553

96. Priscilla L. Owens 925-370-8687
11 Leabig Lane, Martinez, 94553

97. Amanda Staal 925 818.2365
520 Central Ave Martinez, Ca 94553

98. Henry Ruiz
10 LEABIGH, MARTINEZ, CA 94553

99. Jose Limon 925 3728019
487 Arthur Rd Mtz

100. Gladys Perez
10 Leabig Ln MARTZ 94553

101. STEVE ROCHIN
495 ARTHUR Rd 2291263

102. Destiny Holland
509 Palms Drive
Mtz, CA 94553

103. Chris Freeman
509 Palms Dr. Mtz CA

104. Fred Holland
4180 ARTHUR RD MTZ CA

105. Joe Stone
4186 Valley ave Mtz

106. Teresa L Holland
4180 Arthur Rd Martinez CA 94553

107. Refugio Lopez
4297 Cabrilho DR Mtz CA 94553

108. Yvette Duncan
498 Arthur Rd Mtz Ca 94553

109. Richard Martin
241 arthur R.D.

110. LENORA BANKS
482 ARTHUR RD. MARTINEZ, CA 94553

ITEM #10 on Monday, April 7, 2008 ZA
County File # GP0400013, RZ043148, DP043080 and SD048809

APPLICANT - DISCOVERY BUILDERS INC.
BOYD OLNEY JR – OWNER

This is a scoping session to accept public comments.

Jennifer Bennon – I live at 550 Central Avenue which is the road they are planning on using to get to these houses, first the environmental impact, part of the reason why I moved to Martinez is because of the open space when is continually becoming less and less, infact they have built many houses around my area. Right now we get a lot of wildlife there; with more property being taken up by development there is going to less wildlife. Also I am concerned about the traffic, right now we have a huge traffic issue on that street, sometimes it takes me a good 5 minutes to back out of my driveway just from the traffic we already have and with 160 more houses coming in I can say there will at least 320 more cars going down that road. It's a small street, a lot of times if there is parking on the other side of the street it becomes a one lane street also I do not want to see any more traffic. I also heard that they are going to try to make us a sidewalk on that side of street at the owner's expense. When I bought that house 12 years ago there was no sidewalk there, and I don't feel like it should be my responsibility to put a sidewalk in or to have 4 feet of my property taken by eminent domain to build a sidewalk which is what heard that is going to happen. These are my concerns with the project.

Edward Reyes – 545 Central Avenue, I have lived in Martinez for 53 years, what Jennifer said is right. Now that the cows on Buffalo Hill, that's what it was called when I was a kid. The cows were there in pasture years ago before the buffalos were there. Now the buffalos are gone, the frogs have come to houses now. The boards are everywhere now. And we see if this environment is destroyed by homes, then all frogs are not going to come to our houses, the marsh is going to be destroyed. I have talked to a lot of people, I am called the unofficial mayor of Vine Hill, I have talked to the pastor, landlord Missionary Baptist Church, he is willing to sell his property at the back of the corner of Arthur Road and I-680 on ramp the trailer park is selling their home in the first, there is an access there. As I see it, if this house is bought, and the trailer park bought and the back of Pastor Bill's missionary is bought, which he okayed and okayed me to speak for him, I have his card his here if you want to see it. That you can open up this road that is already there and make it the main way to go inside this development to the south end of Vine Hill and up the hill and around and alleviate the problem that is going to happen on Central Avenue and Palms Drive. Palms Drive is a private road owned by the people. Discovery Builders have tried to build there previously, the people said no, went to court they lost it, the houses were not built. I don't know how they are going to go about it to do it again; the end of Central Avenue is a private road. I still don't understand how they are going to do it. I have lived here 53 years, watched the community grow from bad to better. Vine Hill was one of the worst area in Contra Costa now we have gotten better but my concern is the environment, under traffic and under the loss of habitat of the animals, the frogs, birds, raccoons, coyotes and even mountain lions, foxes are in the hills

so this is a major thing that's going to happen and wipe out a lot. This is what I have to say and if anybody wants to speak to me about the building, the new road they are welcome, I will help them I will speak for the people.

Mildard Floyd – I live at 770 Central Avenue, I have been out there for almost 34 years, I have seen a lot of things happen, once thing we have not cleared is its like a swamp land down there they used to be like a lake there where my children and I would go down there and fish. I have a lot concerns about the land down there. What's down there, when they disturb all that what's going to come with that? We just got the land use pulled for the Henry's wood farm and got the trucks off of our street and that's been a fight for many years and now we have a little piece there on our street with all that heavy equipment not coming out there and now we face a possibility of heavy equipment and all this traffic going there to build the homes and all the people that are going to live in the homes. I don't think we should have to put up with all that. I don't think we should be disturbed with all the traffic and speeding, we were fighting that for so long and we though we were gaining and now this comes up. I disapprove of anything happening on that street, like Mr. Edward Reyes said it's not wide enough, it's a private road, it's like we are being invaded, everything gets built over there and we are tired of that. That's all I have to say.

Sharon Kennedy – I live on 580 Central, I know through experience, all the cars that have gone down ditches and knocked off telephone polls, it's a very off shaped street to begin with, when you have 300 cars there, its going to be like a demolition derby for one thing. My problem is there is one way in and one way out of Vine Hill, I want to know where the second road is going to be because I understand the curve now there has to be one way in and one way out. I like all the critters out there too. If they can come in down on Pacheco and they can save the pond for the animals I don't mind that, but I don't want the traffic, there is not even a line painted down in the middle of central avenue, that's how narrow that street is, and I have been out there since 1956 and we don't need that many cars going up and down that street, that's all I have to say.

Norman Leabig – I live at Leabig Lane, my property is joining the property that they want to build. The hill behind me if they cut it down, the area that these people are talking about they will not be able to live there. The amount of people they are planning to put over there is unbelievable. 500 students would be added to the little school, the project should be required to widen Central Avenue and build a school. I am all for improving the area, not for screwing it up. We bought the property in 1964 and I really like the area. The hill currently blocks the residents from the refinery's fumes.

APPENDIX C

Bayview Residential Project
Health Risk Assessment

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BAYVIEW RESIDENTIAL PROJECT
Health Risk Assessment

This Health Risk Assessment (HRA) evaluates the health risks to residents of the proposed project from exposure to toxic air contaminants (TACs). For the purpose of this analysis, risk will be evaluated based on TAC emissions from two different types of sources: stationary sources and mobile sources. Stationary sources located near the project site that may expose residents to TACs include the Shell Martinez Refinery, the Tesoro (formerly Tosco) Refinery, the Acme Landfill and the Central Contra Costa Sanitary District (CCCSD) sewage treatment plant.

Mobile sources emit diesel particulate matter (DPM), which is a carcinogen of concern in the Bay Area. Major mobile sources of DPM near the project site include trucks traveling on Interstate 680 (I-680), locomotives traveling along the railroad tracks directly south of the project site, trucks traveling to the Contra Costa Transfer and Recovery Station (CCTRS) and off-road diesel equipment operating at the CCTRS.

Existing TAC Concentrations

The California Air Resources Board (CARB) has estimated annual average health risks for the San Francisco Bay Area Air Basin based on TAC ambient monitoring data. According to the CARB's 2007 Air Quality Almanac, the lifetime cancer risk from measured concentrations of TACs in 2005, excluding diesel particulate matter, was estimated to be 93 in one million averaged over all Bay Area locations. Risk from diesel particulate matter is based on receptor modeling rather than monitoring data and is therefore only available for select years. In 2000, the CARB estimated that cancer risk from diesel particulate matter exposure was about 480 in-one-million in the San Francisco Bay Area Air Basin. This is lower than the statewide average risk of 540 in one million, (CARB, 2007).

Regulatory Setting

TACs are regulated under both state and federal laws. Federal laws use the term "Hazardous Air Pollutants" (HAPs) to refer to the same types of compounds that are referred to as TACs under State law. Both terms encompass essentially the same compounds. Under the 1990 Clean Air Act Amendments, approximately 190 substances are regulated as HAPs.

With respect to State law, in 1983 the California legislature adopted Assembly Bill 1807 (AB 1807), which establishes a process for identifying toxic air contaminants and provides the authority for developing retrofit air toxics control measures on a statewide basis. Air toxics in

California may also be regulated because of another state law, the Air Toxics "Hot Spots" Information and Assessment Act of 1987, or Assembly Bill 2588 (AB 2588). Under AB 2588, TACs from individual facilities must be quantified and reported to the local air pollution control agency. The facilities are then prioritized by the local agencies based on the quantity and toxicity of these emissions, and on their proximity to areas where the public may be exposed. High priority facilities are required to perform a Health Risk Screening Assessment (HRSA), and if specific risk thresholds are exceeded, they are required to communicate the results to the public in the form of notices and public meetings. Depending on the health risk levels, emitting facilities can be required to implement varying levels of risk reduction measures.

In 2005 the CARB published the *Air Quality and Land Use Handbook: A Community Health Perspective*. This document recommends that special considerations should be made when siting sensitive land uses, such as residential developments, near existing sources of TACs. The document recommends that when possible, buffers should be included between sensitive land uses and the following sources: high traffic freeways and roads, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and large gas dispensing facilities. Other potential sources of TACs to consider when siting sensitive land uses identified in the document include landfills, waste water treatment facilities, and transfer stations (CARB, 2005).

Significance Criteria

According to the Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines, any project with the potential to expose sensitive receptors (including residential areas) or the general public to substantial levels of TACs would be deemed to have a significant impact. Cancer risk is defined as the lifetime probability of developing cancer from exposure to carcinogenic substances and is expressed as increased chances in one million of contracting cancer. Non-cancer adverse health risks are measured against a hazard index, which is the ratio of the predicted exposure concentration to a threshold level, which could cause adverse health effects, as established by the Office of Environmental Health Hazards Assessment (OEHHA).

Projects that exceed the following thresholds of significance for TACs would be considered to have a significant impact:

- probability of contracting cancer for the maximally exposed individual (MEI[1]) exceeds 10 in one million; or
- ground-level concentrations of non-carcinogenic TACs would result in a hazard index greater than 1 for the MEI (BAAQMD, 1999).

[1] MEI is the Maximally Exposed Individual, which represents the worst-case risk estimate based on a theoretical person continuously exposed for 70 years at the point of highest compound concentration in air.

Methodology

Exposure levels of TACs at the project site were estimated based on existing health risk assessments for the stationary facilities identified previously, and by conducting dispersion modeling of major mobile sources in the area. Information on health risks from the Shell Martinez Refinery, Tesoro Refinery, Acme Landfill and CCCSD facility were determined based on AB2588 reports. Health risks that would be incurred at the proposed residential project site from these facilities are evaluated under the health risk discussion below.

Health risks at the project site from nearby mobile sources were estimated by incorporating emissions from mobile sources into the United States Environmental Protection Agency ("US EPA") approved dispersion model AERMOD to calculate ambient air concentrations at the project site. Meteorological data representative of the project site were used along with estimated DPM emissions to calculate pollutant concentrations at various receptor locations. The meteorological station nearest to the project site with data reduced for model input is located at the Shell Martinez Refinery, about 1 mile northwest of the project site. These data were supplemented with opaque cloud cover data from the Oakland International Airport for use in the meteorological preprocessor, AERMET, to prepare hourly surface data files for use in AERMOD.

Emission Rates

I-680 Emissions

DPM emission rates for trucks traveling along I-680 were calculated based on emission factors from EMFAC2007 (CARB's vehicle emissions model for cars and trucks). For the purpose of this analysis it was assumed that all PM2.5 exhaust emissions from diesel trucks would be DPM. Diesel particulate emission rates are projected to decrease each year based on regulations set by the US EPA and the natural retirement of older trucks that generate more pollutants than newer trucks. Therefore, to determine the mean emissions based on a 70 year exposure, emission factors for 2025 were used. This represents a conservative analysis as emissions will continue to decrease substantially beyond 2025. Daily trips were estimated based on truck trip data published by Caltrans. **Table 1** shows emissions estimates that were used to model DPM emissions on I-680.

Locomotive Emissions

Baseline emissions from locomotives traveling on the Burlington Northern Santa Fe rail line near the project site were estimated based on emission factors derived from the CARB's Roseville Railyard Study and on rail traffic estimates for the link near the project site. The emission factors were given in grams of DPM per hour and varied depending on the "throttle notch" in which the locomotives would be operating. Throttle notches are indicative of the load and/or speed condition of an operating locomotive engine. In a technical memorandum written in support of the Bay Area Regional Rail Plan it was estimated that trains traveling along the stretch of rail in the study area are typically traveling at speeds between 35 and 45 miles per hour and that there are between 4 and 6 freight trips per day along the line (MTC, 2006). Based on this information it was assumed that trains passing by the project site would be operating in throttle notch 6, which

TABLE 1
EMISSION RATES OF DPM FOR TRUCKS TRAVELING ON I-680 NEAR THE PROJECT SITE

	2 axle	3 axle	4 axle	5+ axle
vehicle type[a]	LHD1	LHD2	MHD	HHD
number of vehicles/day	4485	998	262	2903
fraction of trucks that are diesel	0.09	0.23	0.70	0.70
number of diesel trucks/day	423	230	184	2042
emissions (grams/mile/truck)[b]	0.016	0.015	0.077	0.136
grams/mile	6.77	3.45	14.17	277.71
miles/truck	2	2	2	2
grams/day	13.54	6.9	28.34	555.42
Average Daily Emissions (grams/day)		**604.2**		

[a] Assumes that 2 axle trucks are equivalent to Light-Heavy Duty Trucks (8,501-10,000 pounds), 3 axle vehicles are equivalent to Light-Heavy Duty Trucks (10,001-14,000 pounds), 4 axle vehicles are equivalent to Medium-Heavy Duty Trucks (14,001-33,000 pounds) and that 5+ axle vehicles are equivalent to Heavy-Heavy Duty Trucks (33,001+ pounds).

[b] Based on PM2.5 emission factors from EMFAC2007 for Contra Costa County assuming an average temperature of 70F, a relative humidity of 30% and a vehicle speed of 55 mph.

SOURCES: EMFAC2007; Caltrans, 2006; and ESA, 2008.

corresponds to speeds of about 40 miles per hour. **Table 2** shows baseline daily emission rates for trains traveling along a 2 mile stretch of rail. These emission rates are based on the conservative assumption that there will be 6 locomotive trips per day.

On March 14, 2008, the EPA adopted new, more stringent, emissions standards for locomotives and marine compression-ignition engines. The new EPA rule (regulation) will reduce DPM emissions in several ways. It tightens emission standards for existing locomotives when they are remanufactured; sets near-term engine-out emission standards (Tier 3) for newly built locomotives; and will set longer-term standards (Tier 4) for newly built-locomotives that reflect the application of high-efficiency after-treatment technology.

The regulatory impact analysis of the new EPA rule includes estimates of annual PM2.5 emissions from locomotives for the years 2008 through 2040 as a result of the new regulation. Based on these estimates, 2040 emissions would be approximately 83% lower than 2008 emissions (US EPA, 2008). For purposes of this analysis, emissions reductions were interpolated out to 2044 where an 85% reduction was reached. From 2044 to 2080 it was assumed that emissions rates would remain at 85% of 2008 levels and that no further reductions would occur. This is a conservative analytic assumption since further reductions are feasible and may be mandated by the EPA in the future. Furthermore, the EPA annual emission estimates for locomotives are based on the assumption that fuel consumption will continue to grow by approximately 1.6 percent per year. In other words, the EPA emissions rates appear to incorporate projected increases in national rail traffic.

TABLE 2
BASELINE LOCOMOTIVE DPM EMISSION RATES (2008)

Model Number	Percent of Fleet	Emission Rate[a] Throttle Notch 6 (grams/hour)	Normalized Emission Rate[b] Throttle Notch 6 (gram/hour)
GP-40	0.6	551.88	331.13
GP-38	0.2	417	83.40
Dash-8	0.2	373.52	74.70
		Emission Rate (grams/hour/locomotive)	489.23
		Average Daily Emissions (grams/day/locomotive) [c]	24.46
		Estimated Average Daily Locomotives	6
		Average Daily Emissions (grams/day)	**146.77**

[a] Emission factors derived from the Roseville Rail yard Study
[b] Normalized by the percent of the fleet
[c] Based on the assumption that trains are traveling along a 2 mile stretch of track at a speed of 40 mph for throttle notch 6.

SOURCES: CARB, 2004 and MTC, 2006.

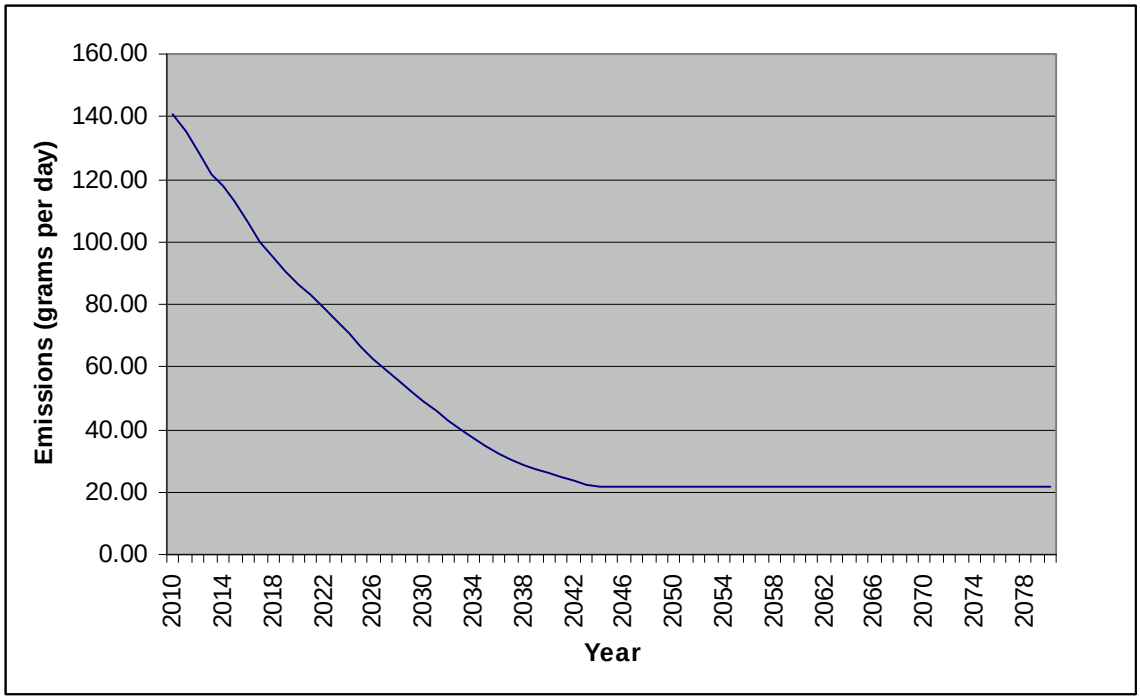
Figure 1 shows the decline in DPM emission rates from 2010 to 2080. For the purpose of this analysis it was assumed that reductions in PM2.5 emissions would be directly proportional to reductions in DPM emissions. Based on these emission rates it was determined that the average daily emission rate over the 70 year period from 2010 to 2080 would be approximately 43.9 grams per day.

Contra Costa Transfer and Recovery Station (CCTRS) Emissions

The CCTRS is a solid waste facility located to the north of the Bayview project site near the intersection of Waterbird Way and Arthur Road. Emissions at the CCTRS occur from two activities: heavy duty on-road trucks importing and exporting waste from the CCTRS site and heavy duty off-road equipment operating on the CCTRS site. On-road emissions were evaluating using the same emission factors used to determine emissions from I-680. However, as a conservative assumption it was assumed that all trucks traveling to the CCTRS would be diesel fueled. Daily truck trips were based on traffic data collected in 2008 at the CCTRS. **Table 3** shows emission rates that were used to model DPM emissions from trucks traveling to and from the station.

Emissions from heavy duty off-road equipment were evaluated using URBEMIS2007[2], which incorporates emission factors from the CARB's OFFROAD program. It was assumed that there are two loaders and one dozer operating at the transfer facility for 10 hours each day. **Table 4** shows the estimated daily emissions from off-road equipment operating at the transfer facility. These emission rates are based on the assumption that all PM2.5 exhaust emissions from the heavy duty equipment are DPM.

[2] URBEMIS 2007 is an air pollutants emissions model that can estimate construction and/or operational emissions from land use projects in California.



Bayview Residential Project ▪ 208078

Figure 1
Daily DPM Emission Rates from Locomotives (2010 through 2080)

TABLE 3
DPM EMISSION RATES FOR TRUCKS TRAVELING TO THE TRANSFER FACILITY

	2 axle	**3 axle**	**4 axle**	**5+ axle**
vehicle type[a]	LHD1	LHD2	MHD	HHD
number of vehicles/day	277	263	63	90
emissions (grams/mile/truck)	0.016	0.015	0.077	0.136
grams/mile	4.43	3.95	4.85	12.24
miles/truck	0.75	0.75	0.75	0.75
grams/day	3.32	2.96	3.64	9.18
Average Daily Emissions (grams/day)		**19.1**		

[a] Assumes that 2 axle trucks are equivalent to Light-Heavy Duty Trucks (8,501-10,000 pounds), 3 axle vehicles are equivalent to Light-Heavy Duty Trucks (10,001-14,000 pounds), 4 axle vehicles are equivalent to Medium-Heavy Duty Trucks (14,001-33,000 pounds) and that 5+ axle vehicles are equivalent to Heavy-Heavy Duty Trucks (33,001+ pounds).

SOURCES: EMFAC2007 and ESA, 2008.

TABLE 4
DPM EMISSION RATES FOR OFF-ROAD EQUIPMENT OPERATING AT THE TRANSFER FACILITY

	Emissions lb/day[a]	Emission Rate g/day
Transfer Station Operations	0.64	290.3

[a] Based on emission estimates from URBEMIS2007 for the following equipment in the year 2025:
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 10 hours per day
2 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 10 hours per day

SOURCES: URBEMIS2007 and ESA, 2008.

Model Inputs

Emissions from mobile sources were modeled as line sources in AERMOD. AERMOD handles line sources by generating a series of uniform volume sources along the designated line. Geographic Information Systems (GIS) was used to determine the geographic location of the sources as well as the location of receptors at the project site.

A two mile stretch of freeway was used to model emissions from trucks traveling on I-680. This source was represented as a line source composed of 53 individual volume sources each 36 meters wide. The width represents the roadway width (30 meters) plus a 3 meter mixing zone on each side of the roadway.

Locomotive emissions were modeled along a two mile stretch of railroad to the south of the project site. This line source was represented by 332 volume sources, each 5 meters wide.

Access to the transfer station is made via Waterfront Road. Therefore, emissions from trucks traveling to and from the transfer station were modeled using a line source beginning at the transfer station and extending 0.75 miles north along Waterfront Road. This source was represented by 43 volume sources with a width of 16 meters to represent the roadway width (10 meters) and a 3 meter mixing zone on each side of the roadway.

A line source composed of 25 volume sources was used to model emissions from off-road equipment operating at the transfer station (CCTRS). Since it is impossible to determine the exact location of each piece of equipment at the transfer station throughout the day, emissions were distributed among these volume sources to determine the concentrations at project receptors assuming that daily emissions will be spread evenly across the transfer station yard.

Receptors were placed every 20 meters around the perimeter of the Bayview project site. Inside the project perimeter, a receptor grid was generated with receptors spaced 20 meters apart.

Source and receptor elevations were imported from the 1 degree Santa Rosa and San Francisco Digital Elevation models. It is important to note that the proposed grading plan would reconfigure the existing slopes by creating gentler slopes through excavation of materials in the upper regions

and filling in the lower regions of the site. The elevation at the crest of Vine Hill, approximately 283 feet above msl, would be lowered by roughly 27 feet to 256 feet above msl. According to the project sponsor, the residual fill would be placed along the southern and eastern perimeters of the project site. Over the full project site, the maximum fill elevation would be approximately 57 feet and the maximum cut elevation would reach approximately 107 feet. Because these changes in elevation cannot be modeled, they are not directly accounted for in the model.

As discussed previously, meteorological data from the Shell East meteorological station, supplemented with cloud cover data from the Oakland International Airport, were used to prepare hourly surface data files for use in AERMOD.

Health Risk Assessment

Mobile Sources

Model Results

Based on modeling results the highest concentration of DPM would be approximately 0.085μg/m^3 and would occur at UTM coordinates [580442.33, 4207075.77]. Peak DPM concentrations are located along the southwestern edge of the property, nearest to I-680 (see **Figure 2**). DPM concentrations are lower at the higher elevations towards the center of the project site.

The modeling results indicate that the impacts of DPM emissions from trucks on I-680 are the largest contributor to DPM concentrations at the project site. At the maximum exposed receptor the emissions from trucks on I-680 constitute approximately 93 percent of the total DPM concentration while locomotive emissions constitute approximately 3 percent and the remaining 4 percent result from operations and truck trips at the CCTRS.

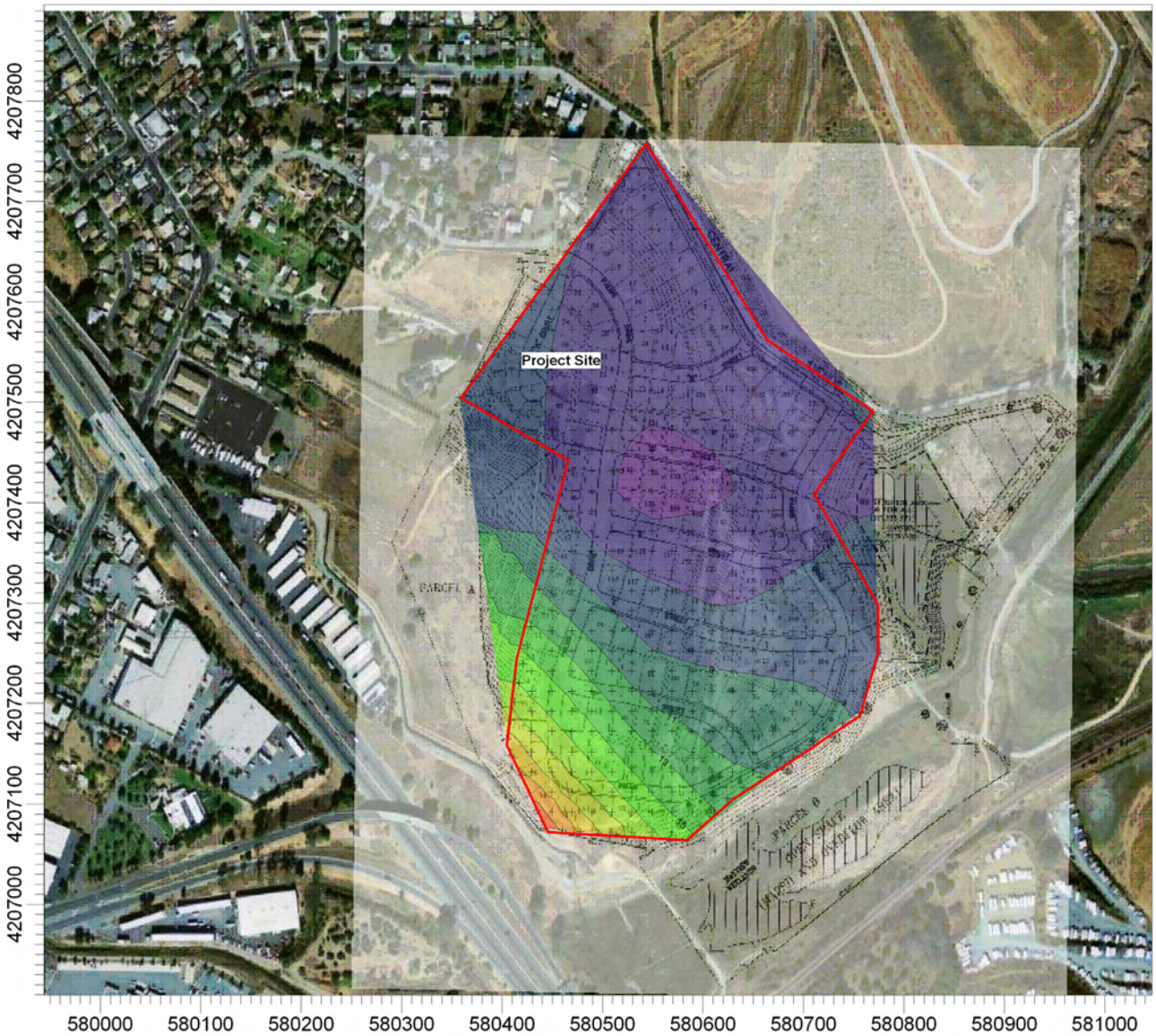
Health Risks from Exposure to DPM

The maximum incremental cancer risk from exposure to DPM at the project site was calculated following the guidelines established by California Office of Environmental Health Hazard Assessment (OEHHA), in which it is assumed that a person would be exposed to the maximum annual average concentration at the site continuously for 350 days per year for 70 years, a worst case assumption. Using the cancer potency slope for DPM of 1.1 (mg/kg-d)$^{-1}$, as established by OEHHA, the estimated maximum incremental cancer risk from exposure to DPM from mobile sources at the project site was estimated to be about 27 in one million. **Figure 2** shows a plot of cancer risks at the project site from mobile sources.

As discussed previously, non-cancer adverse health risks are measured against a hazard index, which is the ratio of the predicted exposure concentration to a threshold level referred to as the reference exposure level (REL). The chronic REL for DPM as established by OEHHA is 5.0μg/m^3. Therefore, DPM emissions from mobile sources would result in a chronic hazard index of 0.017 (0.085μg/m^3 / 5.0μg/m^3). There is no acute REL for exposure to DPM.

PROJECT TITLE:

Figure 2
Cancer Risk at the Project Site (DPM only)



PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL

Cancer Risk Per Million

3.00 5.00 7.00 9.00 11.00 13.00 15.00 17.00 19.00 21.00 23.00 25.00 27.00

COMMENTS:	SOURCES:	COMPANY NAME:	
This figure shows cancer risk at the project site from exposure to diesel particulate matter generated by nearby mobile sources.	**4**	**Environmental Science Associates**	
	RECEPTORS: **510**	MODELER: **Nichole Yeto**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:6,730 0 0.2 km	
	MAX: 27.20718 Cancer Risk Per Million	DATE: **5/30/2008**	PROJECT NO.: **208078**

ISC-AERMOD View - Lakes Environmental Software

C:\Documents and Settings\nay\My Documents\Projects\208078 - Bayview\model\bayviewR.isc

Stationary Sources

Existing Health Risk Assessments

Risk data for each of the facilities near the project site was obtained from the CARB's toxic facilities database (CARB, 2008a). None of the facilities reported an acute hazard index; therefore it was assumed that there are no acute health effects associated with TAC emissions from the facilities. The most recent risk data available for each facility was used in this analysis.

Data on the Shell Martinez Refinery from the year 2005 shows that cancer risk was 9 in one million at the MEI, and that the chronic hazard index was 0.02. In 2001 the Acme Landfill reported a cancer risk of 0.9 at the MEI; however non-cancer health effects were not reported for this year. In 1998 the landfill reported a chronic hazard index of 0.09. The cancer risk and chronic hazard index from the Tesoro Refinery at the MEI were reported in 2000 as 6.5 in one million and 0 respectively. The CCCSD reported a cancer risk of 1.3 in one million and a chronic hazard index of 0.02 in 1998. (CARB, 2008a)

Based on the Shell Martinez Refinery AB2588 report, it was determined that cancer risk at the project site would be approximately half of the risk calculated at the MEI. Therefore, it was assumed that the maximum incremental cancer risk from the Shell Martinez Refinery at the project site would be 4.5 in one million.

The MEI reported in Tesoro's AB2588 report was located 300 meters east of Tesoro's property line. Risks at the project site would be significantly lower than reported at the MEI since the project site is located nearly 3 times further in distance from the property line than the MEI and is located upwind from the prevailing wind direction relative to the source. For the purpose of this analysis it was conservatively assumed that cancer risk at the project site would be approximately half of the risk at the MEI.

Cumulative Health Risk

The cumulative health risk at the project site was determined by summing the incremental cancer risk and chronic hazard index from each of the major facilities and mobile sources described above. As shown in **Table 5** the cumulative worst case cancer risk at the MEI would be 37 in one million, which exceeds the BAAQMD CEQA significance threshold of 10 in one million. The cumulative chronic hazard index was estimated to be 0.147 in one million. This is below the significance criteria of 1.0.

To mitigate cancer risk at the project site gaseous and particulate TAC levels should be controlled at the proposed residence by using mechanical filtration for particulate matter and specialized adsorption collectors for gaseous TACs.

Risk from mobile sources results from emissions of DPM, thus 100 percent of this risk can be attributed to PM emissions. The AB2588 report for the Shell Martinez Refinery indicated that nearly 70 percent of the cancer risk, or about 3.2 in one million, would result from exposure to PM with the remaining 30 percent resulting from exposure to gaseous air contaminants (primarily

TABLE 5
CUMULATIVE HEALTH RISK AT PROJECT SITE

Source	Cancer Risk (risk per million)	Chronic Hazard Index
Mobile Sources	27.0	0.017
Shell Martinez Refinery	4.5	0.020
Tesoro Refinery	3.3	0.000
Acme Landfill	0.9	0.090
CCCSD	1.3	0.020
Cumulative Risk	**37.0**	**0.147**

SOURCES: OEHHA, 2003; CARB, 2008; and ESA, 2008.

benzene). It was assumed that emissions from the Tesoro Refinery would be similar to those from the Shell Martinez Refinery, thus 70 percent of the risk, or 2.3 in one million, was assumed to come from PM emissions. It was assumed that 100 percent of the risk from the Acme Landfill and from the CCCSD facility would be from gaseous TACs, since the TAC emissions inventory that was used for the risk assessment consisted mainly of gaseous TACs. Therefore, in total, it was assumed that 32.8 in one million of the cumulative risk could be attributed to PM emissions while the remaining 4.2 in one million risk could be attributed to gaseous air pollutant emissions.

Studies by CARB indicate that people in California spend over 90 percent of their time indoors, and that total exposure levels of particulate matter in residences without HVAC systems equipped with filtration systems are actually about one third lower than levels outside. Thus, the expected maximum incremental cancer risk indoors at the proposed project site from PM only would be about 21.9 in one million (32.8 in one million risk from PM only without one third reduction). The risk from gaseous air pollutants would remain 4.2 in one million, resulting in a cumulative maximum risk of 26.1 in one million. This maximum risk is greater than the CEQA significance threshold established by the Bay Area Air Quality Management District (BAAQMD) of 10 in one million.

In order to reduce maximum incremental cancer risks to less than 10 in one million, residential units at the project site would have to be equipped with air filtration systems to reduce PM levels by 85 percent or more. According to ASHRAE Standard 52.2 Test Procedures, filters that meet this control efficiency rating fall into the Minimum Efficiency Reporting Value (MERV) rating of 14 or higher. If the project units are equipped with filtration systems meeting a MERV 14 rating, with control efficiency of 85 percent or greater, the cancer risks from PM would be reduced to 4.9 in-one-million. Therefore, the cumulative risk at the project site would be 9.1 in one million, which is below the recommended threshold of 10 in one million.

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